▶ CROSS-CONNECTIVITY

AT&T bets its ISDN chip

Unite meets CCITT recommendation, provides entree to nascent market.

BY JOHN DIX
Senior Editor

BERKELEY HEIGHTS, N.J. — AT&T last week announced its first Integrated Services Digital Network-compatible chip product, a semiconductor that conforms to gelling standards that are intended to allow users to mix and match different vendors' switches, digital telephones and workstations.

AT&T's T7250 Unite chip meets the CCITT's recommended interface standard for communications equipment, known in ISDN parlance as S and T devices. The chip provides the multiplexing capabilities needed to conform to the 2B+D Basic Rate ISDN specification. This calls for the capacity of a single telephone-type twisted-pair wire to be divvied up into two 64K bit/sec B channels for voice and data, and one 16K bit/sec D channel for signaling.

Ideally, private branch ex-

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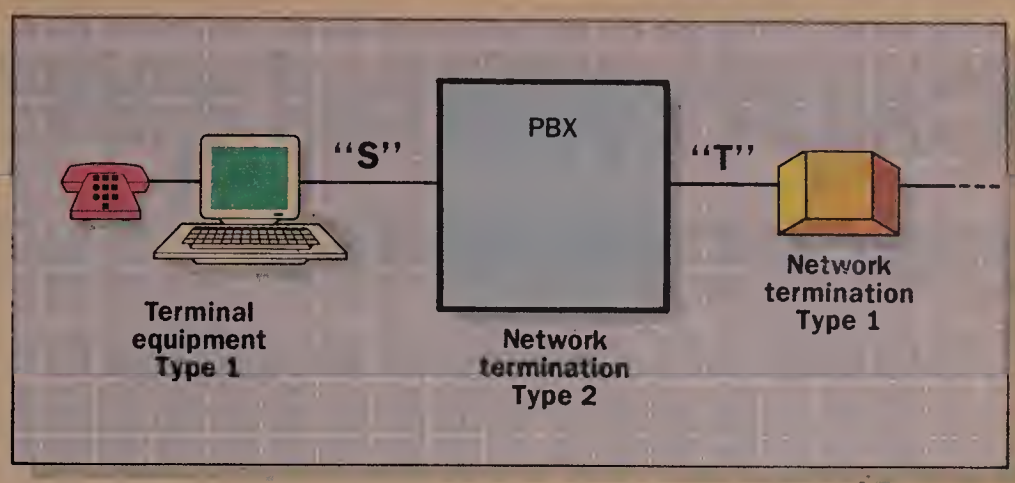
AT&T: ISDN chip advances



AT&T's Unite chip conforms to the CCITT's Integrated Services Digital Network interface standard for use with "S" and "T" devices, illustrated here as the terminal equipment and private branch exchange. The chip conforms to the ISDN 2B+D standard, providing two 64K bit/sec channels for digitized voice or data, and one 16K bit/sec signaling channel over a single pair of wires. Ideally, equipment outfitted with chips that conform to the ISDN standard will be able to work with any vendors' hardware.

NETWORK WORLD

THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES VOLUME 3, NUMBER 21 JULY 28, 1986

▶ BATTLE OF THE TITANS

IBM, Rolm beat AT&T to rich pact

BY JOHN DIX
Senior Editor

PHILADELPHIA — The first solid evidence that IBM is taking large accounts away from AT&T through joint marketing with its Rolm Corp. subsidiary surfaced last week. Pharmaceutical giant SmithKline Beckman Corp., based here, acknowledged it had recently awarded Rolm an estimated $20 million equipment contract because of its ties with IBM.

Concerned about the loss of that and other accounts, AT&T last month assembled a group of top managers to discuss actions it should take to counteract the threat of IBM's Enterprise Marketing Program, an AT&T insider told *Network World*. IBM's Enterprise program is a joint marketing plan that brings key IBM and Rolm sales representatives together to target large accounts.

As AT&T plans its counterattack to the Enterprise program, it is common knowledge that the company is already hasten-

See **IBM/Rolm** page 6

EXCLUSIVE

MCI linked to D.C. bypass deal

BY JOHN DIX
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp. has contracted with a fiber-optic bypass carrier here to provide the long-distance company with direct links to large customers, *Network World* learned last week. The deal is believed to be MCI's first such bypass agreement.

Although an official of the fiber carrier confirmed the contract, he later withdrew comment when informed that MCI had denied involvement with any plan to bypass local telephone companies. MCI, however, concedes that it has contracted with the carrier for other projects.

According to information supplied earlier by the unnamed official, the contract calls for the bypass carrier to provide MCI with a range of T-1 1.544M bit/sec digital fa-

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NETWORK LINE

News

Users may be saddled with dramatic local telephone rate increases unless they organize to battle RBOCs. Page 2.

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US West asks the U.S. Department of Justice for permission to enter a variety of new ventures far afield of its basic telecommunications business. Page 3.

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The lease-for-hire option lets managers evaluate communications professionals without the commitment of hiring. Page 24.

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NEWSPAPER

FEATURE FOCUS

Profile of fiber users reveals T-1 tendency

BY BARRY S. GILBERT
Special to Network World

Of all the mistakes a communications manager can make, choosing the wrong transmission medium is most likely to give him an ulcer. Keeping up with twisted-pair, coaxial and fiber-optic cable is no easy task, and managers are constantly under pressure to hold the line on costs.

Using standard, already installed twisted-pair cable may be less costly than conversion, but very often it cannot provide

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▶ AIRWAVE PIRACY!

Capt. Midnight surrenders

"Folk hero" is brought to justice.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — Federal regulators are hoping to make an example of the mysterious "Captain Midnight," who was unmasked last week nearly three months after he sabotaged a Home Box Office satellite transmission to protest the broadcaster's decision to scramble its signal.

John MacDougall, a satellite dish retailer and a part-time employee of the Central Florida Teleport in Ocala, Fla., pleaded guilty last week in a Jacksonville, Fla., federal court of willfully interfering with satellite transmissions.

According to authorities, MacDougall used the teleport on April 27 to override HBO's signal and transmit the following message onto viewers' screens: "Good Evening HBO from Captain Midnight. $12.95/month? No way! (Showtime/Movie Channel Beware!)" MacDougall's action was reportedly in protest to HBO's decision to scramble its transmissions and charge satellite dish owners for programming they had previously received at no cost. MacDougall's company, MacDougall Electronics, was selling fewer satellite dishes as a result of the scrambling decision.

Although he is viewed by some residential dish owners as a sort of modern-day Robin Hood, the Federal Communications Commission's Field Operations Bureau (FOB) takes a less romantic view of MacDougall's actions. The bureau is publicizing his case in order to send a message to other potential violators. The government views tampering with any telecommunications system as a serious offense, according to Richard Smith, chief of the FOB bureau, which conducted the investigation of the incident.

A variety of sensitive business and government communications are transmitted over terrestrial and satellite links. While most business communications networks are more secure and less likely to be targeted for the type of sabotage experienced by HBO, security experts assert the potential for tampering still exists. The FCC said it hopes its swift response in this case will serve as a deterrent.

MacDougall, who will be sentenced on Aug. 26, faces a $5,000 fine, the revocation of his radio license for one year and a year's probation. He turned himself in last week to the office of the Assistant U.S. Attorney in Jacksonville after the Justice Department determined his identity.

The FCC determined MacDougall's identity after a process of elimination, Smith said. The FOB obtained a list of 580 satellite uplink facilities capable of overriding the HBO signal. Investigators found only 12 facilities that had a character generator, which was used to create the message that appeared on viewers' screens. The FOB found only one uplink facility that did not have a scheduled satellite feed at the time the interruption occured. That facility was the Central Florida Teleport.

Network World wants to make its news coverage even better, and for that we ask your help. If you learn about an interesting event that just occurred or is just about to occur, please call.

We'd also like you to tell us about how you're optimizing your networks.

Call *Network World* Editor Bruce Hoard toll free at (800) 343-6474, extension 332.

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▶ TELEPHONE TARIFFS

Users quiet as RBOCs up rates

BY PAUL KORZENIOWSKI
Senior Editor

Unless users quickly put up the cash and manpower needed to fight local telephone rate increases, they may find their monthly telephone bills rising dramatically.

A number of the regional Bell operating companies have proposed significant rate hikes for local service. Yet, the calls of organizers attempting to marshal users to fight the increases have fallen on deaf ears. Thus the RBOCs may soon find themselves with what amounts to carte blanche in assessing rate hikes.

Traditionally, users have organized well to fight tariff changes filed with the Federal Communications Commission in Washington, D.C. They have not been well-equipped to monitor the activity of state public utility commissions or to fight local tariff increases.

"Currently, users are not equipped to fight rate hikes at the local level," said August H. Blegen, executive director of the Minnesota Business Utility User Council in Bloomington, Minn. "It is unbelievable just how ignorant users are about the problem. Very few telecommunications managers at Fortune 500 companies are even aware of the situation."

Pacific Bell has filed a series of rate revisions that could double or even quadruple the cost of various private lines. A member of the Telecommunications Association (TCA) users group recently tried to organize resistance to the proposed rate increases, but failed.

A number of users expressed concern about the problem when the member spoke at a TCA meeting. However, interest was only cursory and the member has been unable to solicit the support or funds needed to adequately present the users' side of the case before public regulators. The TCA member, whose company prohibits employees from being quoted, said the amount of money he has been able to raise thus far has been downright embarrassing.

Making matters worse, rate case issues are increasing, and the time users have to respond to a filing is decreasing. "There used to be six months to a year before a filing was acted upon," noted Lee L. Selwyn, president of Economics and Technology, Inc. in Boston. Selwyn's firm monitors tariff changes and has counseled user organizations in rate cases. "Now, decisions can be reached in a month."

To respond adequately, business users have to be well-organized, because fighting rate hikes is a labor- and cash-intensive job. "Telephone companies are acquainted with rate-setting procedures and are well-represented before the public utility commission," noted Blegen. "Consumer groups typically stand in for residents. Business has to make sure that it is represented at these proceedings."

In addition to being organized, users have to be willing to spend substantial sums of money. "Becoming involved in a rate case could easily cost $100,000," noted Frank Schoff, founder of the Chicago-based Illinois Telecommunications User Council.

Typically, two types of firms are needed to ensure proper representation. In order to stay current with proposed tariff changes that could affect them, users must first enlist the services of a firm that specializes in monitoring rate filings. Then, if the users choose to protest

See **Users quiet** page 35

▶ RBOC BUSINESS

US West requests new business go-ahead

RBOC files with Justice to enter a slew of markets not related to telecom services.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — US West, Inc. recently asked the U.S. Department of Justice for permission to enter a number of new business markets, some of which are totally unrelated to its basic telecommunications business.

On July 16, the regional Bell operating company asked the Justice Department to allow it to engage in foreign manufacturing, international telecommunications and foreign nontelecommunications businesses.

The request is identical to the waiver request approved by U.S. District Court Judge Harold Greene for Ameritech on June 26, according to a US West spokesman ("RBOC to manufacture," *Network World*, June 30).

In another "me-too" request, US West asked Justice for permission to enter the office equipment and related services business. In December 1984, the department approved a similar BellSouth Corp. request to enter this arena.

US West also requested that the Justice Department allow it to enter the consumer electronics, securities and commodities brokerage and insurance businesses. While the regional holding company said it has no immediate plans to set up shop in either the insurance or brokerage businesses, the spokesman said the company is seeking approval now so it can move swiftly if a business opportunity arises.

If an insurance company was created, it would provide property, life, health, casualty and accident insurance to US West and possibly to other telephone manufacturers, carriers and service providers, according to the waiver filed with the Justice Department.

US West would most likely sell computers and related electronic gear to both business users and consumers, according to the spokesman. He added that, initially, the RBOC will probably look for a joint venture partner in any or all of the new markets it seeks to enter.

The BOCs are currently restricted from entering information services businesses under the AT&T consent decree that broke up the Bell System. BOCs may ask Justice and Greene for waivers to enter new businesses that do not further the BOCs' monopoly power in the local telephone business.

Denver-based US West is the regional holding company of three northwestern BOCs: Mountain Bell, Northwestern Bell and Pacific Northwest Bell. US West is involved in local telecommunications, cellular telecommunications, financial services, real estate, equipment leasing and publishing.

▶ SPECIAL ACCESS

Hikes halted

Users put whammy on BOC plans.

BY MICHAEL FAHEY
Staff Writer

WASHINGTON, D.C. — A group representing some of the largest telecommunications users in the country last week temporarily halted the implementation of private-line rate hikes recently proposed by New York Telephone Co. and New England Telephone.

The Ad Hoc Telecommunications Users Committee, which includes such large users as General Electric Co., JCPenney Co., Ford Motor Co. and Sears, Roebuck & Co., is protesting special access tariff increases of about 20%. A Federal Communications Commission spokesman said seven other parties, among them US Sprint Communications Co., MCI Communications Corp. and RCA Corp., filed petitions objecting to the special access increases.

The proposed increases, filed June 24 with the FCC, were scheduled to go into effect last Thursday. But as a result of the group's protest, the FCC has agreed to suspend implementation until at least Aug. 6 to consider objections to the increase.

If approved, the increase could cost users as much as $40 million dollars this year alone. The hikes would raise the price of the local channel portion of private lines terminating in areas served by New York Telephone and New England Telephone. The local channel is the portion of a private line that connects an AT&T point of presence within a Bell operating company's territory to a customer's premises.

James Blaszak, attorney for the the Ad Hoc Users Committee, said the two operating companies, both Nynex Corp. subsidiaries, have not furnished adequate information to justify their rate increases. In-

See **Hikes halted** page 38

▶ DIRE RATES

Study: Florida net future dim

Research warns costs will soar without voice/data integration.

BY MARGIE SEMILOF
Senior Writer

TALLAHASSEE, Fla. — A recent report commissioned by Florida state officials recommended that the state reevaluate its network, or risk a tenfold increase of telecommunications and information systems expenditures.

The report — called "A Needs Assessment for an Integrated Backbone Statewide Communications Network" — was the result of a joint effort of Florida's Information Resource Commission (IRC), a state agency, and the Committee on Telecommunications of the Florida High Technology and Industry Council, a vendor organization. The report revealed that state communications expenditures could increase from the current level of $400 million to as much as $4 billion per year. Some users dismissed those projections because they said they believed vendor participation would only slant the results of a study.

The $4 billion projection was based on the state's current communications costs, anticipated increases in private-line tariffs and the rising cost of other transmission services. According to G. Howard Krauss, director of new business development for Racal-Milgo, Inc. and committee vice-chairman, the increase could occur over a two- to three-year period.

The state supports separate voice and data networks. Pricing for the state's voice network is based on AT&T Telpac rates. Those prices rely heavily on point-to-point private-line service. Telpac is a bulk rate billing arrangement that is a holdover from predivestiture days.

AT&T's tariff-rescinding efforts rebuffed

AT&T tried to remove Telpac tariffs on several occasions, claiming that rates are not consistent with postdivestiture, cost-based pricing. AT&T's tariff-rescinding efforts have been turned down by state public utility officials, and there are currently no new filings under way to withdraw the bulk billing plan.

However, state communications experts expect state regulators eventually to allow AT&T to eliminate Telpac pricing restrictions. The calculations for future private-line costs were based on existing, non-Telpac point-to-point private-line tariffs.

Darrell Wilson, a technology assessment coordinator for the IRC, said the recommendations made by the vendor subcommittee were geared toward creating a central communications management team and an integrated voice and data environment.

"The private sector has recognized the benefits of an integrated organization," Wilson said. "That was the stimulus for performing the study. The technologies are merging, and we should handle them accordingly."

The vendor committee urged state executives to coordinate all voice and data functions under a single communications manager. This manager would have responsibility for voice and data strategic planning, policy, standards and their implementation.

> *"Some users said they believed vendor participation would only slant the results of a study."*

The committee also urged the governor to draft a strategic plan for providing integrated voice, data and video services over a high-capacity fiber backbone network.

The state was also advised to buy equipment compatible with proposed Integrated Services Digital Network standards. Finally, the report called for beefing up the state's voice and data communications staff.

The report resulted in a budget request to develop a strategic plan. The budget request was approved by Florida Governor Bob Graham. However, the state legislature quashed it, though it agreed to fund a new study that would draw up a management structure for a unified voice and data environment.

Wilson said the proposed legislation may pass if the study provides evidence that state communications management must be reorganized.

See **Florida** page 35

▶ USERS GROUPS

Users get tough, results

Organized customers flexing muscle.

BY PAUL KORZENIOWSKI
Senior Editor

When it comes to spurring vendors to improve their products, users are finding there is strength in numbers.

Rather than individually petitioning companies for product enhancements, users are banding together and presenting vendors with carefully drafted recommendations for improvements. Owing to an increasingly competitive marketplace and the growing influence of user organizations, vendors today are responding more readily to users groups' concerns. Some of the more powerful users groups have reported that between 50% and 80% of their requests are satisfied by manufacturers.

One illustration of the impact of users groups came last month when IBM unleashed more than 125 products. The company trumpeted the fact that the announcements satisfied 65 of 68 requests from two of its largest users groups, Share and Guide. Both groups had been pressing IBM for a number of connectivity enhancements.

Share and Guide, both of which have been in operation for some 10 years, typically deal with IBM's larger systems. To join, users must own at least one IBM 4300 series mainframe. A third users group, Common, represents users of IBM's minicomputer and microcomputer lines.

IBM is not the only manufacturer that must deal with organized users. Digital Equipment Corp., Wang Laboratories, Inc., Racal-Milgo, Inc. and Avant-Garde Computing, Inc. are among the many other companies with active users groups.

What appears to be changing is the willingness of communications equipment users to form these groups and force vendors' hands. Users are no longer satisfied taking only what a manufacturer gives them and have begun to back up their words with their purchasing power.

A good example of this is the work of the Manufacturing Automation Protocol and Technical and Office Protocol users group. This group is significantly affecting the development of office and factory communications products based on the emerging MAP and TOP standards.

The formation of users groups seems to be spreading to new areas, some of which were created by the breakup of AT&T. "Traditionally, AT&T was not very responsive to users because the company knew it was the only game in town," said Hollis Sobers, manager of corporate telecommunications at Allied Signal, Inc. in Morristown, N.J.

But that is changing. According to Sobers, the AT&T System 85 users group, which has been meeting for a few years, played a key role in spurring AT&T's latest round of enhancements to that private branch exchange.

One reason for the growing influence of users groups is increased competition. Manufacturers such as IBM, Wang and Data General

See **Vendor response** page 38

▶ HOSPITALS

IBM wins $25m deal

Big Blue to develop long-distance, SNA-based personal computer net for the Hospital Corporation of America.

BY KARYL SCOTT
Washington, D.C. Correspondent

BETHESDA, Md. — IBM's Federal Systems Division (FSD) recently won a $25 million contract to design and develop a long-distance Systems Network Architecture-based network for the Hospital Corporation of America (HCA), based in Nashville.

The network will connect personal computers at HCA's 477 affiliated hospitals around the country to an IBM 3090 mainframe in Nashville.

HCA took six months to assess IBM's system-integration capabilities prior to awarding the contract. FSD will design, develop, test and deliver the software and system architecture, which will be based on the 3090. The work is scheduled to be completed in December 1988.

"We don't want to be vendor-dependent, but we decided to support IBM standards because we felt IBM could best answer our needs," said Joseph Hodge, vice-president of MIS at HCA. "We will support the IBM 3090, SNA and LU 6.2 peer-to-peer communications. The future thrust of our strategy is to move toward [Document Interchange Architecture/Document Content Architecture] for our particular needs."

Hodge said Open Systems Interconnect has not been figured into the future of HCA systems because there are currently no acceptable OSI standards.

> *"We decided to support IBM standards because we felt IBM could best answer our needs."*

"We are undertaking a major expansion of our system now, and [we] chose IBM to help us do this," he said.

HCA is a $6 billion company that owns or manages 477 hospitals. "We have a highly distributed data processing environment, and we need a national network to support our various administrative needs," Hodge said. The planned SNA network will not only connect HCA hospitals, but it will provide access to physicians' offices, insurance companies and ambulatory care facilities.

"With the implementation of our own network, we will convert from our current dependence on the [General Electric Information Services Co.] network," Hodge noted. HCA will continue to use Geisco's Medical Claims Clearinghouse and Electronic Data Interchange services as needed, "but we want the ability to do most transactions in-house," he said.

The HCA contract is the second major nongovernmental networking contract for IBM's FSD. The first was awarded to the Complex Systems Division of FSD last February by United Airlines. FSD is designing a Token-Ring-based network that will support United Airlines' Enterprise System for travel agents.

The $25 million HCA contract comes in addition to a Token-Ring Network contract HCA signed with IBM earlier. Although the Token-Ring Network has not been delivered yet, once it is implemented, it

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"ABC membership applied for" ABP

▶ 3COM CORP.

Token-ring series debuts

Products allow more flexibility, but users may find price too steep.

BY MARY PETROSKY
West Coast Correspondent

MOUNTAIN VIEW, Calif. — 3Com Corp. last week unveiled a series of token-ring networking products that include a personal computer interface card and a wiring scheme that mimics IBM's token-passing ring network in a bus topology.

Although 3Com's wiring scheme may offer users greater flexibility than IBM's Cabling System, industry analysts and even company officials admit the $1,095 interface board is too pricey for many users.

The company's TokenPlus products are compatible with IBM's network and conform with the IEEE 802.5 standard, according to product manager Bridget McNiel.

3Com also announced that its 3+ network operating system software supports both the TokenPlus network and the company's previously available Ethernet-type network. In September, the company plans to release Version 1.1 of 3+, which will support IBM's Personal Computer Adapter network interface card, McNiel said.

> *"3Com's wiring scheme could be more flexible than IBM's Cabling System, analysts said."*

The TokenPlus product line also includes the Token Connection, a $1,295 expansion card for the 3Server, and 3+NetConnect software. This software, priced at $1,250 with availability in September, is an additional module for the 3+ operating system. The software enables a 3Server or a personal computer acting as a server to function as a gateway between a Token-Ring and an Ethernet network, or as a bridge between multiple Token-Ring or Ethernet networks. The TokenLink Plus adapter card is designed as a high-performance interface board that features an Intel Corp. 80186 coprocessor for processing protocol software and 256K bytes of random-access memory for buffering data packets.

3Com is targeting its TokenPlus products at small work groups. "The ability to install a network easily is important to small work groups," McNiel said. Based on this philosophy, 3Com designed its cabling scheme with tap boxes, called RingTaps, that attach via thumbscrews to the trunk cable. All cabling, including trunk cable, consists of two shielded twisted data pairs. Each $95 RingTap comes with two meters of attached cable.

Although different in topology, one advantage to IBM's Token-Ring Network is it can be used with non-shielded twisted-pair wire.

3Com network cable also includes extension cables for RingTaps, and various lengths of trunk cable, beginning at $50, which can be connected with $25 trunk barrel connectors. Ring Loopback Plugs, priced at $35, terminate each end of the network. A $90 Y-MAU cable can be used to connect 3Com's trunk cable to an IBM Multistation Access Unit.

"Because it's a star-wired system, the IBM system makes it difficult when you [want to connect] two Personal Computers sitting next to each other," McNiel said. "If the wiring closet is 200 feet away, you have to draw wire back to that wiring closet and back out to the next Personal Computer in order to connect two Personal Computers that might be five feet from each other."

3Com's wiring scheme could prove more flexible than IBM's, according to Scott Haugdahl, senior systems specialist with Architecture Technology Corp., based in Minneapolis. However, from a management and testing standpoint, users may find it easier to go into a wiring closet and test an IBM Multistation Access Unit, which connects eight Personal Computers, than to test individual tap boxes such as those used by 3Com.

> *"'They're not trying to compete with IBM's basic board,' Wells said."*

"Two things will make 3Com's network adapter attractive," Haugdahl said, "availability and the fact that they put that coprocessor on it." But, he added, "At $1,095 a crack, I don't think people are going to run out and buy 3Com [boards] for their entire system. It makes sense to use a board like this in a server, but it's not cost-effective for a workstation."

One significant aspect of the 3Com announcement is that 3+ software will run on the IBM Token Ring, said Louise Herndon Wells, an industry analyst with Dataquest, Inc. in San Jose, Calif. She added that 3Com's adapter board should be compared to IBM's Personal Computer Token-Ring Adapter II, announced last April and priced at $895, rather than compared against IBM's original $695 Personal Computer Token-Ring Adapter.

"They're not trying to compete with IBM's basic board," Wells said. "That they have a high-end token-ring product is interesting. [However,] the average small

See **3Com** page 38

▶ TECHNICAL REFERENCES

AT&T releases new ISDN net documents

Specs give CPE vendors manufacturing guidelines.

BY BOB WALLACE
Senior Writer

BASKING RIDGE, N.J.— AT&T last week announced the availability of two Integrated Services Digital Network documents designed to provide customer premises equipment vendors with guidelines for manufacturing AT&T ISDN-compatible gear.

Network World first learned of AT&T's intentions to draft and distribute the documents in April ("AT&T rewrites ISDN specs," *Network World,* April 28). Jim Byrnes, an AT&T Communications, Inc. spokesman, said the technical references are designed to stimulate the vendor community to build equipment that would comply with the ISDN specifications and work with AT&T Communications' networks.

> *"The technical references are designed to stimulate the vendor community to build equipment that would comply with the ISDN specifications."*

AT&T Publication #41449 establishes fundamental Primary Rate Interface specifications for all AT&T products and services. The second document, #41459, contains technical information that reflects AT&T's implementation of Primary Rate Interface specifications for connecting to AT&T Communications network services. The second technical reference document supercedes a 1985 edition.

AT&T is planning to implement the interface in its network beginning in 1987.

ISDN is envisioned as a digital end-to-end service that integrates voice, data and image on a single twisted-pair wire. The Consultative Committee on International Telephony and Telegraphy, has established two methods of access to an ISDN.

The Primary Rate Interface, 23B+D, is designed to support 23 64K bit/sec data channels and a single 64K bit/sec channel to handle transmission of signaling information and packetized data. The Primary Rate Interface is designed to connect large customer premises equipment to an ISDN.

This interface provides a link between the customer premises and a carrier's central office.

The basic rate interface, 2B+D, is tailored to support a pair of 64K bit/sec data channels and a single 16K bit/sec channel for transmission of signaling information and packetized data.

Although the documents were planned to act as a catalyst for the development of ISDN-compatible

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▶ BANKING

Gulf blossoms with new ATMs

Network serving southern states is expected to double by year end.

BY JIM BROWN
New Products Editor

NEW ORLEANS — An interstate automated teller machine (ATM) network serving the central Gulf Coast region expects to double in size and, with little or no modifications, service some 1.7 million cardholders.

New Orleans-based First Commerce Corp. said its Gulfnet network currently has sufficient capacity to support an expected increase in the number of ATM sites, from the 140 currently located in Florida, Mississippi and Louisiana to about 410 by year end. The increase will result from a recently signed agreement that allows six additional banks to participate in Gulfnet.

A Gulfnet user can stroll up to an ATM terminal in Pensacola, Fla., insert a card, push a few buttons and receive cash from a Mississippi bank account. All the user sees is a screen asking questions and the cash the ATM rewards for entering the right answers. The phone lines, modems, front-end processors, switches and software establishing a communications link between the Florida ATM and the Mississippi bank are invisible as far as the user is concerned.

"The ATM is not attached to our network. It's attached to the local bank's host system," said Bret Jacobs, a systems analyst with First Commerce Service Corp., Gulfnet's operating company and a division of First Commerce. The host system in turn is linked to a Tandem Computers, Inc. Nonstop TXP online transaction processing system acting as a switch in Gulfnet's New Orleans operations center.

The Tandem system runs Tandem Electronic Fund Transfer Superswitch (Tess) software provided by MTECH, the electronic banking division of Dallas-based Momentum Co.

A typical transaction, Jacobs said, starts when a card is inserted in an ATM. The ATM reads the card numbers and relays the information to its host system. That host system looks at the first few card numbers and determines whether the card belongs to that bank. If it does, the host uses a personal identification number (PIN) on the card to access the user's account and records the transaction.

If the host system does not recognize the card, it passes the transaction to Gulfnet. "By using routing tables, we determine which bank issued that card and send the transaction to that bank's host," said Jacobs. The remote host reads the PIN, accesses the account and communicates with the remote ATM through a Gulfnet-maintained communications link.

Individual host systems, including Burroughs Corp., NCR Corp., IBM and Hewlett-Packard Co. mainframes, are required to use IBM's 3270 Binary Synchronous Communications protocol to transmit over Gulfnet. They are linked to the Tandem computer over leased phone lines and AT&T Dataphone II Set 2096A multiplexing modems. Each Dataphone II 2096A supports four full-duplex 2,400 bit/sec lines, Jacobs said.

Each member bank's host must conform to a list of 13 standard Ebcdic formatted software message sets before being allowed to join the net. "I haven't run into anybody that has blinked an eye at those yet," Jacobs said.

Member banks can connect ATMs to their host system in the way they desire. John Lacomb, assistant vice-president and manager of the on-line systems group at First Commerce Service, said ATMs used by First National Bank of Commerce, First Commerce Corp.'s banking division, communicate with an IBM host over multidrop phone lines. First National Bank of Commerce, he added, uses Diebold, Inc. and IBM-supplied ATMs, while some affiliated banks use NCR ATMs running under Diebold emulation.

Lacomb also said leased lines from member banks are hooked to an IBM 3725 front-end processor linked to the Tandem system. "The 3725 polls each one of these devices on a continual basis and asks that device if it is ready to send any information," Lacomb said. Likewise, each member bank's host system continuously polls the Tandem system for messages.

With a variety of computer systems forced to talk the same language, security plays a major part in any ATM network. "Probably one of the most complicated issues in getting people hooked up to the network is bringing them up on PIN security and how we handle it," Jacobs said. Gulfnet uses the Data Encryption Standard to protect personal financial transactions.

The PIN number is encrypted at the ATM in that bank's encryption key code. It remains in that key code when passed to the Tandem switch, where a pair of Atalla Corp. security modules converts it to the key code the other bank uses.

The fault-tolerant Tandem sys-

See **Gulfnet** page 33

IBM/Rolm from **page 1**

ing to reassemble its long-distance service and equipment manufacturing divisions in reaction to heightened competition. The Federal Communications Commission last May lifted restrictions requiring the separation of those divisions.

The loss of the SmithKline Beckman account to Rolm apparently brought the issue to a head within AT&T. SmithKline Beckman awarded Rolm a contract for an unspecified number of private branch exchanges providing roughly 20,000 ports, according to William Caton, director of corporate telecommunications at SmithKline Beckman. The Rolm equipment will replace AT&T Dimension PBXs and some Centrex services.

"AT&T was a stronger vendor," Caton admitted, "but Rolm and IBM together have a strong advantage for a company like ours because we are a major IBM user. Enterprise Marketing had a great deal to do with the decision."

Interestingly, MCI Communications Corp., a company partially owned by IBM and long rumored to be a participant in the Enterprise Marketing Program, was not involved in the bidding for the SmithKline Beckman contract. Caton said his company has evaluated MCI services but will remain an AT&T long-distance user.

Analysts cite this case as an example of how the IBM label can get Rolm in the door of many accounts. "Data processing has generally had a higher degree of visibility with senior management than telecommunications," said Ian Angus, president of Angus TeleManagement Group, a communications consulting firm in Toronto. "A lot of companies have decided to go with Rolm simply because of IBM."

According to Marty Gruhn, "The AT&T reorganization can be viewed as a direct reaction to the IBM marketing plan." Gruhn is vice-president of the Sierra Group, an industry research firm in Tempe, Ariz.

But Gruhn also offered a counterview. "We view IBM's Enterprise Marketing as a preemptive strike," she observed. "IBM knew that AT&T was going to be allowed to consolidate its sales force." She said IBM used the regulatory shackles binding AT&T to beat it to the punch.

Try as it might to patch its various divisions back together to gird for competition, AT&T is bogged down by the logistical nightmare of shuffling around thousands of employees and relocating offices.

Last week, however, AT&T was scheduled to announce internally a new group of top accounts that will be targeted by a joint sales team consisting of equipment and service salespeople, the AT&T source said. AT&T was expected to add 100 accounts to the first 10 identified for joint marketing efforts. The source said the company hopes to have merged all major accounts by the end of the year.

Washington update

BY KARYL SCOTT
Washington, D.C. Correspondent

■ The U.S. House of Representatives has slashed the Federal Communications Commission's proposed budget for fiscal 1987 by $4.8 million as part of a 5% across-the-board budget cut at the Departments of Commerce, Justice and State and related federal agencies. The original FCC budget request of $96,363,000 was trimmed to $96,300,000 prior to this most recent round of cuts. The $4.8 million cut, which would put the FCC budget at about $91.5 million, is a result of the 1985 Gramm-Rudman-Hollings Act, which is designed to balance the federal budget, according to an FCC budget official.

■ The Social Security Administration (SSA) is shopping for a video network to link its Baltimore, Md., headquarters with 17 regional SSA offices across the country. The network will provide transmission of training programs to employees at the regional offices. SSA recently issued a request for proposal in which it asked for a complete system, including transponder capacity on a Ku-band satellite for two ours, five days per week. Bids are due in early August. The agency hopes to award a contract by the end of September and to have the system operational by year end.

■ The National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce is concerned that Motorola, Inc.'s radio frequency-based local-area network could interfere with NOAA meteorological satellite transmissions operating in the 1,700- to 1,710-MHz band of the radio spectrum.

The FCC is currently considering whether to license radio local net systems, such as Motorola's, for commercial use. Motorola currently has an experimental license to test its radio local-area network. The FCC has asked for comments on the proposed rule-making and has extended the reply period until Aug. 22 in order to allow NOAA to study potential interference problems.

Radio local nets operate without wiring, sending and receiving data via radio frequency.

▶ PURCHASING

Compatibility ranks high in buyers' minds

Price often takes a backseat to other factors when users pick new products.

BY NADINE WANDZILAK
Staff Writer

Price is neither the sole nor the prime factor on which users base their purchases of communications equipment. While price is high on the list of influences, users list equipment compatibility, vendor support and expansion and upgrade potential as more important factors.

Compatibility with existing equipment is the No. 1 priority for David Johnson, vice-president of corporate systems for Family Life Insurance, a subsidiary of Merrill Lynch & Co. that is located in Seattle. Second on Johnson's priority list is "a cost the corporation can afford." Then comes user support, which he differentiated from, and ranked ahead of, a vendor's ability to maintain the product.

Engineering support and price carried equal weight when Johnson Controls, Inc. in Milwaukee recently selected Codex Corp. as its modem vendor, according to Ken Osowski, Johnson Controls' senior communications analyst. The company required that the engineering support be provided by the vendor's own support staff. Codex is offering an attractive lease-with-option-to-buy plan, Osowski said. The firm was selected from a list of eight, based on its corporate parent, Motorola, Inc., its track record with Johnson Controls and its ability to stay current with technology, as well as price, he said.

> *"'If a piece of equipment is not cost-effective, we don't want it,' said Jack McGrath of Conrail."*

The primary consideration for Thomas Oakes, director of system operations for Education Loan Services in Boston, is also support. That includes both user support, that is, "having someone able to work with you on equipment," and equipment support, or maintenance and service. When Oakes' company set up its network three years ago, "We had no one on board who knew about networking," he said. "We said, 'We need to find a company to help us.' "

Oakes' firm found a vendor who spent half a day explaining options, with no sales pressure, Oakes said. When it came time to buy equipment, the company paid less to that vendor, who also provided maintenance and service, than it would have paid to a vendor selling by catalog, without support. Soon after the equipment was installed, there were problems. Oakes called the vendor and got service right away.

Oakes ranked price second and equipment compatibility third.

"If a piece of equipment is not cost-effective, we don't want it," regardless of whether or not it is technologically advanced, said Jack McGrath, assistant vice-president for telecommunications at Conrail in Philadelphia. A five-year communications plan, reviewed and revised annually, keeps McGrath focused on "where I am now, and where I want to be."

Planning is also important to Donna Parker, vice-president of telecommunications for a major West Coast retailer. She asked that the firm remain unnamed. After reviewing what equipment will best fit her company's overall business plan, she considers flexibility and future options, that is, equipment that allows expandability or upgradability. After price, she looks at a vendor's track record.

In a case where a vendor is relatively new, she will examine its background, its funding and who is involved in product design. She also considers the design from a user's point of view. For example, must the vendor be called in to perform updates, or can this be done by users themselves?

Top management has to trust the judgment of the communications

See **Purchase** page 38

▶ MODEM TECHNOLOGY

Early users experiment with V.32 capabilities

But limited applications may stifle wider popularity.

BY MARY PETROSKY
West Coast Correspondent

A growing number of large user companies are experimenting with V.32 modems. But the high cost and limited applications for these full-duplex synchronous modems will likely keep them from being more widely implemented in the coming months.

To date, only a handful of vendors have introduced V.32 modems, which have been specified by the Consultative Committee on International Telephony and Telegraphy to operate at 9.6K bit/sec over either dial-up or leased lines. Concord Data Systems, Inc. of Marlborough, Mass., Codex Corp. of Mansfield, Mass., and Infinet, Inc., of North Andover, Mass. — which resells Concord Data's modem — are among the few vendors shipping V.32 modems. Their products range in price from $3,000 to $3,500.

Early users now testing the V.32 include the Atomic Energy Division of E.I. DuPont Co. and Los Alamos National Laboratories. Both organizations are looking at potential applications for the products, including using the high-speed modems in conjunction with dial-up lines to provide backup facilities for leased lines. Ford Motor Credit Co. has already replaced more than 70 2,400 bit/sec dial-up synchronous modems with V.32 modems, thereby improving communications between remote branches and the company's headquarters.

Vendors are hoping V.32 modems will appeal to leased-line users looking to save money with direct-dial service and to users whose applications involve periodic large file transfers.

"I see a lot of potential leased-line replacement," said Kenneth Miller, president of Concord Data Systems. Like his competitors, Miller points to declining dial-up rates as a trend that will help make V.32 modems more attractive over time.

The DuPont division purchased a pair of V.32 modems for a one-shot graphics demonstration, according to Frank Fortune, staff analyst at the Aiken, S.C., plant. With the modems, a manager was able to receive data from the plant via an IBM 3279 terminal and make a presentation to a vice-president in the company's Wilmington, Del., office. "We don't have a dedicated line between here and Wilmington," Fortune explained.

When evaluating modems for dial-up use, Fortune looked for good response time. "We got lucky and [the modems] worked fine," he said. "We did an hour-and-a-half demo." In general, the plant doesn't use dial-up lines for communications because of security concerns, Fortune said. Now he is considering using the modems in conjunction with dial-up lines as backup for critical leased lines on the 375-square-mile plant site.

> *"Ford Motor Credit Co. has already replaced more than 70 2,400 bit/sec dial-up synchronous modems with V.32 modems."*

Ford Motor Credit has increased its data flow more than fourfold since switching to V.32 modems earlier this year, according to James Pierce, systems analyst at the company. "We were using 2,400 baud modems and getting an effective bit rate of 1,500; now we're getting an effective bit rate of 6,500," Pierce said. Ford is using the V.32 modems for communications between its corporate data center and minicomputers at 77 credit branches across the country.

Each night, the mainframe polls the minicomputers at the branches, which are each linked via leased lines to at least one other local branch office. Once the day's credit transactions are updated in the mainframe — a two- to three-hour process — information is transmitted back out to the branches. The minicomputers then run their own maintenance program to update their files, which takes three to four hours.

With the 2,400 baud modems, communications time amounted to another one to two hours each night. Therefore, the entire updating process often was not completed before the minicomputers had to be back on line in the morning, Pierce said. The V.32 modems helped shave the communications time to half an hour per branch, he said. "A lot of times, [a speed of] 2,400 is sufficient. But in an application like ours, where we have this tight time window and all

See **V.32** page 34

▶ LABOR RELATIONS

So far, so good in CWA/RBOC dealings

Two weeks before contract expires, officials bet there will be no strike.

BY NADINE WANDZILAK
Staff Writer

WASHINGTON, D.C. — As contract negotiations between the Communications Workers of America (CWA) and the seven regional Bell operating companies continue, CWA representatives are optimistic that agreements will be reached before current contracts expire on Aug. 9.

The first postdivestiture negotiations on behalf of some 310,000 workers at local telephone companies owned by the RBOCs got underway last month. The CWA, based here, also represents some 155,000 communications workers at AT&T. The union and AT&T reached a tentative contract settlement last month after a three-week strike. CWA members employed by AT&T are expected to vote on the contract by Aug. 4.

With two weeks to go before the CWA-RBOC contracts expires, CWA officials involved in negotiations with Bell Atlantic Corp., BellSouth Corp. and US West, Inc. said both sides are optimistic that agreement will be reached before the deadline. A CWA official involved in negotiations with Southwestern Bell Corp. said he is hopeful that agreement will be reached by Aug. 9, although he admits that little progress has been made on issues dividing the two sides.

At Bell Atlantic, the tone is upbeat, according to CWA public relations coordinator Ed Lewinski. A strike authorization vote was taken among union members last week, but results of that vote were not available at press time. Such a vote gives top union officials authority to order a strike if a settlement is not reached before the contract expires.

At BellSouth there were "no significant stumbling blocks" as of last week, according to Tim Ryles, CWA public relations coordinator. A strike authorization vote is scheduled to be completed by Wednesday.

At US West, union negotiators are confident an agreement will be reached before the current contract expires, according to CWA public relations coordinator Bruce Thoren. CWA members at US West were scheduled to participate in a strike authorization vote last Thursday.

William Harwell, CWA public relations coordinator for Southwestern Bell, said, "We're dug in on certain things, and they're dug in on certain things." The results of a strike authorization vote were due Friday.

According to Clara Allen, CWA public relations coordinator for the CWA district that includes Nynex Corp. and the New Jersey segment of Bell Atlantic, "There are no definite answers and no wage proposals yet." The CWA has presented its major proposals, and the RBOCs were presenting theirs last week, she said. The strike authorization deadline was Friday.

Employment security is a key ingredient in the CWA's overall contract package. The union claims almost 40,000 jobs in RBOC companies have been eliminated since the 1984 breakup of the Bell System. The union wants a guarantee of comparable jobs and training for employees affected by work force reductions or reorganizations.

CWA also wants guarantees that nonunion, unregulated RBOC subsidiaries will not subcontract or hire from outside while CWA workers are being laid off or are on recall in regulated RBOC units.

The CWA claims that more than 90% of the RBOCs' income is "assured," owing to the companies' mandate to provide universal local telephone service. The seven RBOCs ranked among the top 80 U.S. corporations in sales for 1985, according to CWA figures, and among the 26 most profitable firms in the U.S. The union claimed the RBOCs' combined net profits climbed almost 11% from their 1984 level to $7.5 billion in 1985, while their combined revenue reached $63.3 billion.

The proposed CWA and AT&T contract calls for an 8% wage increase over three years and includes job security provisions. Under that contract, no outside workers would be hired to replace laid-off CWA workers. AT&T also agreed to contribute $7 million each year of the three-year contract to a job training program to be run jointly by the company and the union.

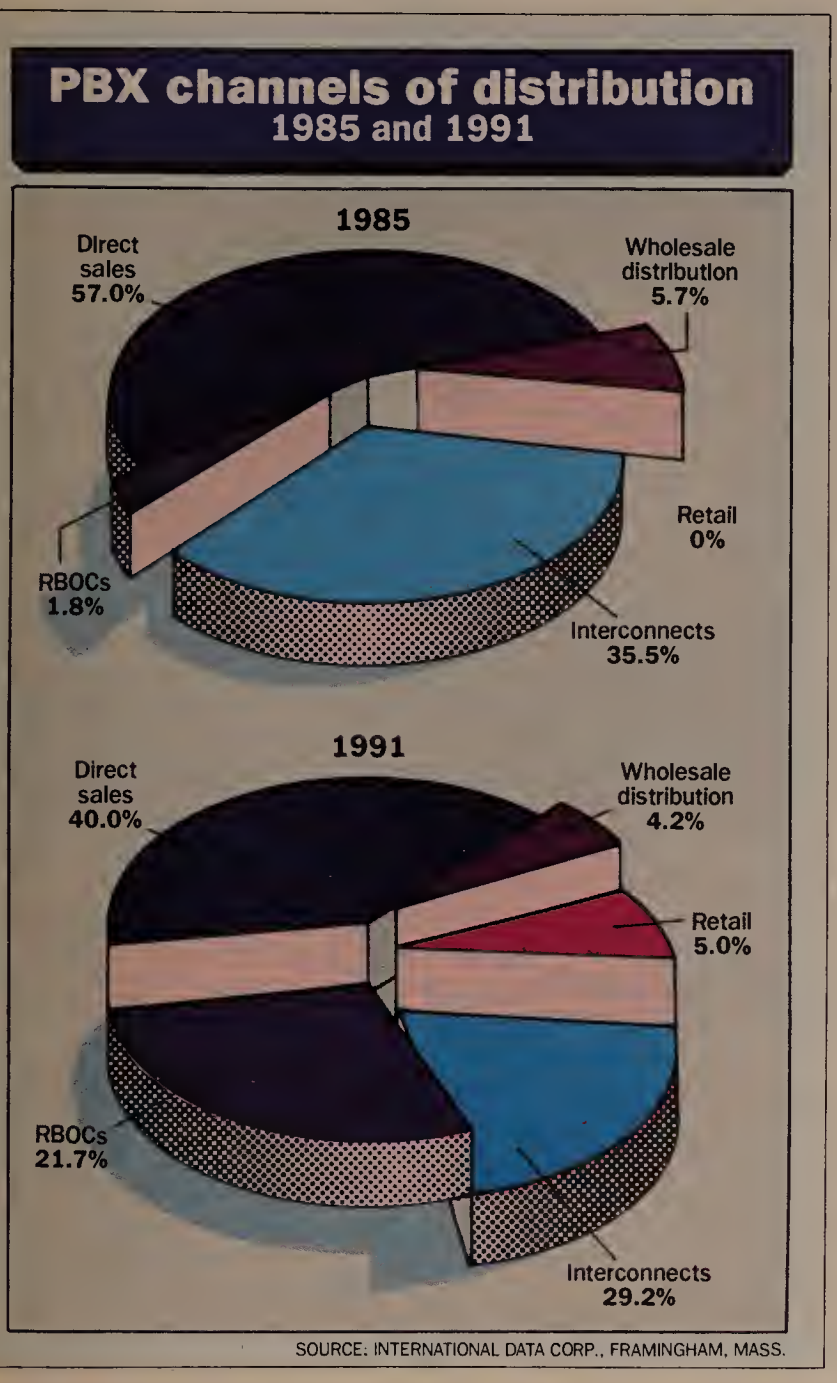
INDUSTRY UPDATE

MCI's last-quarter earnings up

MCI Communications Corp. reported revenue of $942.5 million and income of $16.4 million, or 6 cents per share, for the quarter ended June 30, 1986.

This compares with revenue of $819.4 million and net income of $19.8 million, or 8 cents per share for the preceding quarter; and revenue of $601.2 million and net income of $34.3 million, or 15 cents per share, for the June quarter a year ago.

The most recent quarter includes the combined results of MCI and Satellite Business Systems, which was acquired from IBM on Feb. 28, 1986.



PARTNERSHIPS

GTE, Siemens ally; set foreign sights

To be formed Sept. 30, new company will be 80% owned by Siemens, 20% owned by GTE.

BY MICHAEL FAHEY
Staff Writer

NEW YORK — GTE Corp. and Siemens AG have agreed to form a joint venture to sell transmission systems and central office switching systems to overseas markets.

However, in the U.S., the new company will sell only GTE's transmission equipment. The agreement puts to rest rumors that the two firms would combine to organize a worldwide central office public-switching venture.

GTE and Siemens are scheduled to form the new company by Sept. 30. It will be based in the U.S. and will initially sell transmission equipment and central office equipment to telephone companies in Taiwan, Italy and Belgium. These sales will come from GTE's existing base of international sales. The GTE transmission hardware targeted for the U.S. market is primarily radio microwave equipment, according to a GTE spokesman.

> *"Both will continue to market their CO switching products in the U.S."*

The two companies refused to discuss terms of the agreement, except to say that Siemens would own 80% of the unnamed company and GTE would control the rest.

"Essentially, the way the deal works is we get money from Siemens," a GTE spokesman said. "Siemens gets our international transmission and central office system business plus our domestic transmission equipment business. They will also get our business system operation. That is primarily PBXs for the Belgium market."

Both companies will continue to market their central office switching products in the U.S., where Siemens sells its EWSD product and GTE its GTD-5. According to a joint statement issued by the two companies, technological differences between the GTD-5 and EWSD would have made the merging of their U.S. central office switch operations prohibitively expensive.

In the joint statement, the companies said, "Evaluation by our telecommunications specialists indicated that there were no advantages for merging the technologies of the Siemens EWSD and GTE GTD-5 digital switches into a single system for U.S. applications."

The companies said the technological problems preventing a merger of their central office switching efforts in the U.S. do not apply to transmission equipment.

Future plans to develop new products and services have not been firmly established. A GTE spokesman said there was a possibility that the new company may develop a central office switch that could meld the two companies' offerings. A Siemens spokesman said there were no definitive plans for such a product.

Earlier this month, GTE and United Telecommunications, Inc. agreed to merge their two long-distance networks and form US Sprint Communications Co.

VENDOR VIEW

EUGENE LOTOCHINSKI

Use of information technology divides the winners from the losers

As organizations today compete for customers and profits, the winners are likely to be those that exploit the leverage of information systems in efficiently managing their businesses.

The application of information technology can support a business plan by driving costs down, while driving business volume and responsiveness up.

Information technologies provide organizations with opportunities to establish end-to-end networks and network services, which link offices, customers, distributors and suppliers across local, national and international geographic boundaries. Digital switching and transmission systems, as well as a variety of digital terminals to access networks, are evolving to supply integrated, multimedia voice and data communications. These resources can provide organizations with competitive leverage in a variety of ways.

To capitalize on the benefits of applying information technologies, organizations must include the use of communications and information technologies in the strategic planning process. Decisions will be required about investments in hardware and software for information processing and computing.

Organizational changes may be desirable or necessary to achieve closer information links within the organization or with customers and suppliers. Information technologies may lead to new ways of marketing, selling and serving products. These alterations must all be incorporated into future plans.

Particularly important in the strategic planning process is the compatibility of information-related products and systems. Without long-range planning, an organization runs the risk of implementing systems that cannot work together or that become obsolete with new technological developments.

Within the organization, general management and man-

See **Information** page 10

Lotochinski is vice-president of market development at Northern Telecom, Inc. in Nashville.

▶ PROFILE

Hank Schoening runs decentralized network at Johnson & Johnson

Telecom director moved quickly when Tylenol scare hit. Now he's advising the company on how to prepare for the future.


Hank Schoening

BY MARGIE SEMILOF
Senior Writer

RARITAN, N.J. — When news of the Tylenol capsule tampering reached Johnson & Johnson's New Brunswick, N.J., headquarters, the corporation's telecommunications team immediately swung into action.

In less than seven hours, Director of Telecommunications Hank Schoening and his communications staff — aided by the efforts of both AT&T and Northern Telecom, Inc. — hastily reconfigured Johnson & Johnson's Northern New Jersey telecommunications network to efficiently process the multitude of calls that poured in from concerned customers.

Schoening attributed the company's success in handling the crisis to effective planning and preparation. "Our new digital private branch exchange was configured with spare capacity," Schoening said, adding that "the automatic call distribution software was in place. When it came time to move," he said, "we were in a position to set up telephone stations, a common meeting area and to handle last-minute wiring changes."

> *"Our new digital private branch exchange was configured with spare capacity; the automatic call distribution software was in place."*

The company was fortunate to have a wealth of experienced staffers at its communications helm. One of those is Schoening, a 21-year Johnson & Johnson veteran who has worked in almost every technical department within the $6.5 billion multinational company.

In the data communications arena, he has sported titles such as maintenance foreman, manufacturing engineer, systems analyst and computer hardware evaluator. Schoening was director of MIS for seven years before moving into his current slot as Johnson & Johnson's first director of telecommunications.

The Brooklyn, N.Y., native's on-the-job experience is also buoyed by several college degrees, including a bachelor's degree in engineering from City College of New York, a master's degree in industrial engineering from Newark College of Engineering in Newark, N.J., and an MBA from Rutgers University in New Brunswick, N.J.

Schoening is currently responsible for corporate telecommunications decisions at Johnson & Johnson's New Jersey offices. Johnson & Johnson is a worldwide corporation that chooses to decentralize its company communications management functions. Each of the company's 170 locations are autonomous and therefore are responsible for their own communications decisions.

From the Raritan site, Schoening administers a mix of PBXs and Centrex services. The company has an extensive Wats network that links about 15 Northern New Jersey locations and a host of point-to-point lines for data communications. "Our network is not complex by others' standards," he said. "We use mostly point-to-point lines because the quality is predictable."

Prior to divestiture, the company delegated the management of most corporate communications tasks to AT&T. It recently underwent the organizational change that created a corporate telecommunications department. The shift led to the creation of Schoening's current position.

"We never had internal technical expertise for voice equipment," he recalled. "We had five administrative staff members for Centrex. We also had five data employees to manage the information center. Our communications staff now numbers 35."

One of Schoening's responsibilities is to provide a central pool of expertise to help Johnson & Johnson companies evaluate telephone system alternatives.

"We act as a formal consulting unit," he said. "We will help another company location by evaluating its needs and establishing requests for proposal. We then make recommendations to the company's management based on the vendor responses."

His advice on choosing a vendor varies, depending on the size of the investment. For large systems, Schoening suggests studying the vendor's business reputation, its ability to support products and its efforts to continue making product enhancements. Schoening said he believes service and functionality are more important than price.

"It's not important to pay a lower price if the system's long-term viability is suspect," he said.

Schoening said the biggest mistakes users make when managing their own information systems is overcommitting to unproven technology and skipping critical preparation at the business and planning level.

"Eventually, managers begin to hit projects much larger than they are accustomed to, or [they] begin using a new technology," he said. "The process must be approached carefully, with both eyes open.

"Managers make the basic assumption that new technology always works," Schoening added. "Everything has a development cycle, and when you are a technical person, you become a skeptic. There is a big difference in a product being available and a product being troublefree.

> *"When it came time to move, we were in a position to set up telephone stations."*

"At the same time, you don't want to be so careful you never get anything done," he added.

Schoening named several ingredients to becoming a top-rate communications manager. He said that in addition to technical skills, today's communications manager needs business skills.

"You must know your company and be able to read and write effectively," he said.

Speaking on the skills of today's network employees, Schoening observed that data people may be too technical and lack business and communications skills. Conversely, he added, voice staffers may be too business-oriented and not technical enough.

"But," Schoening conceded, "it isn't realistic to want everything from everybody."

Schoening is currently developing a formal plan that will set up guidelines for introducing new networking tools throughout the corporation. One of the difficulties of a decentralized approach to network management is that Schoening must make an extra effort to drum up support from other telecommunications teams.

But he accepts the structure of decentralization as part of Johnson & Johnson's heritage. Schoening cited one of the constant messages that flows throughout John Naisbitt's management bible, *In Search of Excellence*.

"The advantage of having a decentralized environment is that you bring the decision-making process down to a lower level," Schoening paraphrased. "There is no right or wrong way to manage; it depends on the business. But if you are too big, you become a dinosaur. If you get kicked in the foot, it takes a long time to reach the brain."

Information from **page 9**

agers of information systems must work together to plan for future needs and applications. Management brings insight to the scope of the business, its growth expectations and plans.

Those with technical expertise in data processing and telecommunications better understand the capabilities and economies of new products and systems, as well as future technologies.

Equally important in the strategic planning process is establishing relationships with suppliers of products and systems. Joint planning with vendors helps to identify major new opportunities and define primary needs. Designers and manufacturers of communications systems can help the organization to integrate equipment and services into powerful, end-to-end information networks that will meet current and future needs.

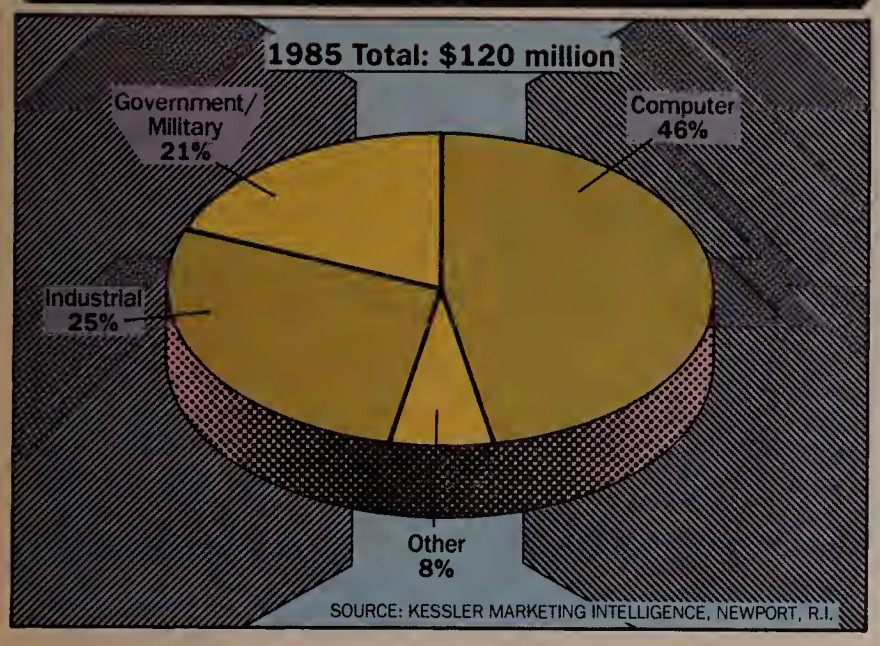
Information becomes a resource when it can be managed and leveraged for use as a strategic weapon, thereby adding value to products and services. Organizations that include information technology in strategic planning will drive the application of new information technologies. Those who don't anticipate and seize these opportunities will be left behind by the leaders.

TELECOM TRENDS

Data communications method uses AC wire

Start-up GridComm, Inc., the maker of a data communications technique that uses existing AC wiring, announced recently that it has secured $14 million in orders from multistore dealers, distributors and value-added resellers. GridComm's technique supports up to 32 personal computers and other peripherals, but only eight devices can communicate at any one time over the four channels derived from AC power. GridComm is located in Danbury, Conn.

U.S. fiber-optic data communications market by application segmentation



LONG-HAUL SERVICE

Pied piper woos

Three carriers follow AT&T merger lead.

BY JOHN DIX
Senior Editor

Following the lead of AT&T's largest long-haul competitors, three regional long-distance carriers have now begun merger talks.

The board of directors of Argo Communications Corp. in New Rochelle, N.Y., LiTel Telecommunications Corp. of Worthington, Ohio, and Microtel of Boca Raton, Fla., agreed to join the privately held firms in an as-yet-unnamed corporation.

A committee, with representatives from each company, is scheduled to meet in Atlanta by the end of this week to develop a business plan for the merger. If the plan is finished by the end of the month and approved by company investors, the new firm could begin operation as a unified entity as soon as the beginning of October, an Argo spokesman said.

The merger would combine Argo's satellite network, serving 11 major U.S. cities, with Microtel's fiber-optic net, serving Florida and Georgia, and LiTel's fiber network, which spans five Midwestern states. Microtel and LiTel are both members of the National Telecommunications Network, a consortium of seven regional fiber carriers that have come together in an attempt to create a nationwide presence.

All three carriers are partially owned by

See **Merger** page 12

GIZMO

Voice Dialer out

BY JIM BROWN
New Products Editor

SANTA CLARA, Calif. — Innovative Devices, a two-year-old company headquartered here, has developed a telephone with a voice-activated automatic dialing feature.

The Voice Dialer is based on voice-recognition and speech-synthesis technology. It uses an Intel Corp. 6502 eight-bit microprocessor and 64K of random-access memory to learn and store the names of up to 100 persons. Each person can be associated with up to two telephone numbers.

To train the telephone to remember a name, customers push a command key and are told by a computer-generated voice to speak a person's name twice. The unit takes a digitized voice print of the name each time and records the average voice print in memory. Phone numbers for that person are then entered into memory through the telephone's keypad. Any number of users can enter names on the device as long as the directory limit of 100 stored names and 200 numbers is not exceeded.

Users unfamiliar with the telephone can seek help by hitting a button that activates computer-generated voice instructions. This is made possible by an additional 32K of on-board read-only memory.

Although the product is princi-

See **Voice Dialer** page 12

CROSS TALK

JOHN DIX

Proposed passing of BOC scepter to FCC is just a tempest in a teapot

It seems ironic that a legislative proposal to give control of the Bell operating companies to the Federal Communications Commission — which is considered lenient today — would cause such a furor when the court that presently controls the companies has already proved so liberal.

According to the North American Telecommunications Association (Nata), in the last two years, U.S. District Court Judge Harold Greene has rejected only one out of roughly 70 BOC requests to diversify into new lines of business. Nata is an association of communications equipment vendors that could suffer competitively if the BOCs are permitted to manufacture the equipment they are already permitted to sell.

Nata reports in its biweekly newsletter, "Washington Update," that Greene has already let the BOCs into businesses such as "software, data processing, real estate, foreign consulting, financial services and cellular exchange service outside their operating territories."

The BOCs are still prohibited from manufacturing equipment and providing long-distance and information services.

As willing as the court has been to shear local telephone company bounds, Nata and a slew of other industry heavyweights fear that the FCC would be all too willing to cut the last few restraints. They oppose the bill introduced in the Senate recently by Sen. Robert Dole (R-Kan.), the Federal Telecommunications Act of 1986, which proposes transferring control of the BOCs from the court and the Justice Department to the FCC.

Opposition has come from equipment manufacturers, including Nata members, AT&T and others; long-haul carriers such as MCI Communications Corp. and the National Telecommunications Network (a consortium of regional fiber-optic carriers); users groups, including the powerful International Communications Association and the Ad Hoc Telecom Users Group; and the Communications Workers of America.

All parties fear that the FCC, given its stated belief in the power of the free market, would remove the last vestiges of BOC regulation. The attendant fear is that, once free, the BOCs would use revenue generated from their local telephone service monopolies to subsidize competitive ventures.

For its part, Nata suggests that, instead of loosening BOC restrictions, Congress should be investigating the link, if any, between local telephone company rate hikes and losses sustained in new ventures. The association claims the BOCs pushed $5 billion worth of rate hikes through state public utility commissions in the last two years and lost an estimated $1 billion in competitive enterprises. Nata claims the BOCs are using "ratepayer funds to underwrite competitive ventures."

One of the arguments against the Dole bill is that it would reinstitute a system that was recognized as faulty in 1974 when the Justice Department filed its antitrust suit against AT&T. That case, which was resolved with the Bell System breakup, stemmed from the fact that the FCC was incapable of preventing anticompetitive behavior. Nata maintains that the FCC "remains unequipped or unwilling to enforce antitrust policies today."

Of course, everybody arguing against the deregulation of the BOCs has their own best interests in mind.

Transferring control of the BOCs to the FCC makes sense. The commission has hundreds of employees schooled in the com-

See **Tempest** page 12

Voice Dialer from **page 11**
pally designed for consumers, Ed Toledo, vice-president of operations, said the firm is developing a multiple-line version of Voice Dialer for business applications.

Toledo also said that, while the current product has not been designed to work with specific private branch exchanges, it may be compatible with some. "There are so many different PBXs in the field, it's hard to confirm that the Voice Dialer works with every single one of them."

Besides voice-activated dialing, the telephone supports many other functions. The device can be secured with spoken passwords, preventing access to the name and number directory and controlling who can access outgoing trunks. Users can also verbally tell the device to look through its directory and read back the number of a specific person.

The telephone can be programmed to limit outgoing calls to preprogrammed emergency numbers only.

The device operates on direct current and has a two-hour battery backup. It is being sold through major retail channels for $249.

Merger from **page 11**
Chicago-based Centel Corp., the nation's fourth-largest independent telephone company, and Alltel Corp., the fifth largest, which is headquartered in Hudson, Ohio.

The new company would have revenues of roughly $150 million, but it would be backed by the nearly $50 billion in combined assets of corporate investors.

The proposed merger is only the most recent by-product of an industry consolidation that began early this year when ALC Communications Corp. was formed by the merger of Allnet Communication Services, Inc. and Lexitel Corp. The trend peaked when GTE Sprint Communications Corp., the nation's third-largest long-haul carrier, agreed to join forces with United Telecom's US Telecom subsidiary, forming US Sprint Communications Corp.

An uphill battle

Merging Argo, Microtel and LiTel will increase the stature, reach and presence of the new company but still leave it with a tough uphill fight against carriers several times its size. "Some resellers are larger than $150 million," noted Bill Reed, director of research services and an authority on long-distance with Link Resources Corp., a market research firm in New York.

The new company intends to focus its marketing effort on business accounts, according to Dale Gregory, president and chief executive officer of Microtel. That effort would be aided by the company's international links. Argo is partially owned by France Cable and Radio and, besides AT&T, is the only international carrier serving that country. LiTel is also partially owned by overseas companies.

Today, Microtel is the only company of the triumvirate that has reported a profit. LiTel has not been able to match that feat, but Argo hopes to be able to climb into the black later this year.

The Argo spokesman said that together, the companies could cut costs by eliminating duplication of effort.

Tempest from **page 11**
plicated art of telephone company regulation.

Greene and a few aides can't possibly compete. The Justice Department can't either; it admitted that fact when it backed the proposal to turn control over to the FCC.

The real issue, however, is not whether the FCC should oversee the BOCs — even though that is the battlefield on which the war is being waged — but rather, whether the FCC should have the power to overturn decisions made by a Federal District Court to settle a Justice Department antitrust case.

DATA DELIVERY

"If personal computers eventually replace terminals in the office, it won't be anytime soon. The Ascii display market continues to grow, despite rampant price cutting that has eroded profit margins.

excerpt from IDC Impact
International Data Corp.
Framingham, Mass.

Average Mips per terminal user

Group	1984	1985	1986	1987	1988	1989	1990
Mid-range	0.011	0.011	0.011	0.017	0.023	0.033	0.039
438X	0.020	0.020	0.020	0.020	0.020	0.024	0.024
High-end	0.022	0.026	0.031	0.032	0.032	0.032	0.032
Average all systems	**0.017**	**0.019**	**0.022**	**0.025**	**0.026**	**0.029**	**0.030**

Mips: million instructions per second

SOURCE: SANFORD C. BERNSTEIN & CO. INC., NEW YORK

IBM 3174 FALLOUT

Cluster controller market heats up

IBM's new controller line mix may spoil the plug-compatible vendors' recipe.

BY PAUL KORZENIOWSKI
Senior Editor

IBM has turned up the heat in the cluster controller market and some plug-compatible vendors may soon be forced out of the kitchen.

The new IBM 3174 is fueling the market fire. Typically, users buy from plug-compatible vendors for two reasons — their products are cheaper or more functional. The IBM 3174 line overcomes problems that the IBM 3274 controller line had in those two areas.

Prices for the new controller line range from $5,900 to $12,390, close to a 25% price reduction from similar 3274 models. "The plug-compatible vendors' products are no longer a lot less expensive than IBM offerings," noted Ilene Goldman, an industry analyst at International Data Corp., a Framingham, Mass.-based market research firm.

"The plug-compatible vendors' products are no longer a lot less expensive than what IBM has to offer."

In response to the IBM announcement, Memorex Corp. recently cut prices on its 2174 and 2274 controller lines by 25% to 35%. In addition to the price cuts, Memorex extended the length of its maintenance agreement. The company had been offering a three-month agreement, but now offers a one-year warranty, a feature that IBM added in its June announcement.

The 3174 includes a number of features not found in the 3274 line. The device attaches directly to the IBM Token-Ring Network, supports twisted-pair wiring, works with a number of Ascii terminals, includes protocol conversion features and has more internal storage than the 3274 line.

The announcement of these features draws IBM even with some plug-compatible vendors. However, users will have to wait for many of the features to become available.

Even with the 3174 announcement, IBM's offering still falls short of its competitors. For example, Telex Computer Products, Inc. in Tulsa, Okla., offers print-spooling capability and supports multiple logical sessions, which IBM doesn't.

Other vendors are also poised to announce new product lines with more features than their IBM counterparts. ITT Courier Corp. is expected to announce a new line of controllers later this month. Analysts agreed that IBM is attempting to squeeze a few of the other vendors out of the market. The 3174's microcode is reportedly harder to copy than that of the 3274. "When IBM announced the 3274 line, companies like Mohawk Data Sciences Corp. and Raytheon Data Systems eventually decided to drop out of the plug-compatible business," noted Joseph F. Wagner, an industry analyst at Dataquest, Inc., a market research firm in Cupertino, Calif.

Dataquest estimates that the installed base will grow from 83,000 in 1985 to 173,000 in 1990.

This growth will come principally from

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IBM SECURITY

Sixth annual MIS conference slated

FRAMINGHAM, Mass. — MIS Training Institute has announced its Sixth Annual Conference on Control, Audit and Security for IBM systems.

The conference is slated from Sept. 21 to 25 at the Boston Park Plaza Hotel. Keynote speakers include Robert A. Markell, vice-president of software systems at IBM's Entry Systems Division, and Adam Osborne, chairman and chief executive officer at Paperback Software International.

The conference is geared to data security professionals and electronic data processing auditors.

Scheduled sessions include recent changes in computer crime characteristics; IBM's Systems Network Architecture: security and control concerns; and local-area networks: the technology, security and control.

The basic conference fee is $795, and there may be additional charges to attend special workshops or events.

MIS Training Institute is located at 4 Brewster Road, Framingham, Mass. 01701. The organization's telephone number is (617) 879-7999.

DATA DIALOGUE

PAUL KORZENIOWSKI

Data dialogue ditties

A market heats up. Now that local-area networks have spread throughout most large companies, communications managers are wrestling with the problem of linking local networks to larger networks.

A number of manufacturers are aggressively moving into this arena and attempting to supply users with gateways and bridges. Market analysts have predicted robust growth for these companies. IBM has never been known for leading-edge technology, but the positioning of its Token-Ring Network represents some anticipatory thinking.

The company is aggressively tying the Token Ring to its other offerings. Links to the 3725 front-end processor, 3174 cluster controller and System/36 have already been announced and analysts expect other devices to be added to the network. The only shortcoming of IBM's strategy is that most of the products won't be available until next year.

Buddy, can you spare a dime? A number of old-line computer manufacturers are shifting product development and marketing resources toward communications.

Data General Corp., Wang Laboratories, Inc. and even IBM are positioning their companies as communications as well as computer suppliers. Computer sales have been slow for a more more than a year now, and manufacturers are trying to move into other lucrative markets. A number of analysts have predicted tremendous growth in many communications markets.

However, if one takes a close look at traditional suppliers in these markets, one finds few are doing well financially. Private branch exchange, mo-

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Controller from **page 13**

cluster controllers used in conjunction with departmental systems.

"I don't see a lot of demand coming from traditional data entry applications," Wagner said. "Growth will come from the office automation market."

Currently, IBM controls close to 60% of the controller market and a number of vendors are struggling to hold on to less than 5% of the market revenue.

These companies will be feeling the heat from the IBM announcement and some may be forced to exit.

Memorex, which has done better overseas than in the U.S., was the first vendor to respond to the IBM announcement and seems to have deep enough pockets. The same holds true for ITT and AT&T. Telex Computer Products, Inc. has been gradually increasing its market share and seems set for the short term.

Lee Data Corp. was mentioned as a possible dropout. However, Lee recently purchased IBM plug-compatible terminal maker Phaze Information Machine Corp. and is attempting to broaden its product range.

Harris Corp. may fall victim to IBM pressure.

"Since the IBM announcement, everyone has been waiting for the other shoe to drop," Wagner said. "In the next two weeks, how vendors will respond will become much clearer."

Data from **page 13**

dem, multiplexer and network management vendors have all been chopping margins in response to competitive pressures.

Success stories are few and far between. What will happen to the computer vendors if communications markets turn out to be less lucrative than expected?

Explosive growth does not equal cash cows. Small markets easily support rapid growth rates. For example, sales of T-1 multiplexers were estimated at $100 million in 1985.

Throw in another piddly $50 million and the market would be growing at the phenomenal rate of 50% a year. Venture capitalists are often attracted to this type of growth rate and before you know it, plenty of start-up companies are sticking their fork into the market pie.

However, some companies wind up with only a sliver of the pie, which does not please their investors. As soon as the company makes a few bucks, the venture capitalists will try to recoup their investments by quickly putting the company on the block.

Of the 30 companies currently pushing T-1 products, analysts expect that only two to four will be in business in a few years.

Rumors of acquistions, mergers and strategic alliances pervade the industry.

Stay tuned.

It will be interesting to see which companies will be selling T-1 multiplexers in three years.

Kudos to a new guy. Start-up Network Equipment Technologies, Inc. (NET), located in Redwood City, Calif., has been on the receiving end of a lot of praise.

One user said the company's T-1 multiplexer was "the most reliable piece of communications equipment" he had ever owned. IBM reportedly is recommending NET boxes to large customers, and NET salesmen are joining IBM personnel on various sales calls.

Before purchasing Cohesive Network Corp. for $28 million, Digital Communications Associates, Inc. reportedly wanted to buy NET. Negotiations fell through when NET asked for $100 million. The company obviously feels it is worth a lot more than Cohesive.

That's a lot of chutzpah for a company that did about $12 million in sales in 1985 and is expected to do about $25 million this year.

Oh, what a life. After watching analysts make numerous predictions concerning various markets, I have reached the conclusion that no one really knows what to expect next.

No matter how industry statistics are cloaked, basically they represent someone's best guess and some analysts are better guessers than others.

Recently, two reports from respected financial houses came to our office. Both of the reports dealt with IBM's plan to reach $100 billion in revenues by 1990. Both of them said that the company stood a good chance of reaching its objectives, but they listed different means IBM could use to achieve its goal.

One report said that additional revenue would be based on increased sales of IBM's large systems. The other said growth would come from growth in communications sales.

Literally millions of investment dollars ride on the ability of these companies to make accurate forecasts. Yet, these predictions are based on opinion as much as facts. Pretty scary, eh?

In New York, a taxicab driver told me that he traded in his desk at a Wall Street firm for a cab. Driving a cab was much more relaxing, he claimed. I don't think I've ever had a relaxing ride in a New York cab.

FACTORY COMMUNICATIONS

"MAP is important to any company that is interested in improving its manufacturing systems. Theoretically, it is very efficient, and it offers the manufacturing manager a lot of flexibility and control with factory networking.

Peter Carrillo
network technologies senior specialist
McDonnell Douglas Aerospace Information Services

SOURCE: FROST & SULLIVAN, INC., NEW YORK

▶ FACTORY STANDARDS

Aerospace giant raises MAP banner

McDonnell Douglas eyes protocol's potential.

BY BOB WALLACE
Senior Writer

ST. LOUIS — McDonnell Douglas Corp., the nation's second-largest aircraft manufacturer, has enlisted the aid of a factory communications training firm and has created a Manufacturing Automation Protocol pilot network designed to familiarize management and staff with the factory communications standard.

McDonnell Douglas' actions are a reflection of the company's continuing efforts to forge product standards both within the corporation and in the communications industry. The $345 million corporation, along with a squadron of its competitors, has already begun examining the risks and benefits of squeezing MAP technology into

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INCIDENTALS

Ship Star Associates, Inc. of Newark, Del., is offering a pair of one-day courses entitled "MAP/TOP, the Key to CIM," and "Mini-MAP and Enhanced Performance," Sept. 4 and 5 in Chicago. Both courses will cover Manufacturing Automation Protocol specifications Version 2.2, Version 3.0 and Technical and Office Protocol Version 3.0. For additional information on the courses, contact Ship Star at (302) 738-7782.

The Society of Manufacturing Engineers (SME) is sponsoring a new seminar entitled "Developing Practical Artificial Intelligence Strategies for Manufacturing." The seminar will be held Sept. 9 and 10 at the Westin Hotel in Detroit, and Oct. 15 and 16 at the Dunfey City Line Hotel in Philadelphia.

The program instructor will be Henry Eric Firdman, the founder and president of Henry Firdman and Associates, Inc., a firm engaged in diverse activities in artificial intelligence and expert systems.

For additional information on the seminar, contact Nancy Loerch at (313) 271-1500, ext. 386.

Eight separate events will be included in the Ultratech Conferences and Expositions, Sept. 22 through 25, at the Long Beach, Calif., Convention Center. The events are: Robots West, Vision West, Manufacturing Automation Protocol, the 1986 World Congress on the Human Aspects of Automation, Automated Guided Vehicles, Artificial Intelligence and Simulation and Finishing Strategies.

For additional information on the events, contact Ultratech Public Relations at (313) 271-0777.

FACTORY FACTS

RAJ MELVILLE AND GEORGE KOSHY

Manufacturing info should flow throughout the corporate hierarchy

First of a two-part series

Today's manufacturing facility has several processors used to perform such engineering functions as design, analysis and manufacturing resource planning. In addition, manufacturers have processors dedicated to business uses such as corporate planning, accounting and control.

In an effort to link these systems together and to reduce overall costs, the management of manufacturing corporations is moving toward integrated manufacturing. This concept aims to link departments' local automation efforts to improve information flow and control.

The major components of an integrated manufacturing system include shared data bases, systems hardware and software and the communications links that allow this vital data to be transferred.

The communications network is the key component; it transports information to wherever it is required. A properly designed communications backbone network is of paramount importance for a successful integrated manufacturing strategy.

Melville and Koshy are associates with Booz, Allen & Hamilton, Inc. in Lexington, Mass.

The introduction of General Motors Corp.'s Manufacturing Automation Protocol dramatically changed the factory communications environment. But the various areas within that environment have been unevenly affected. MAP's immediate impact has been felt mainly on the factory floor. However, a manufacturing manager must integrate office and data processing networks in the factory.

> *"Information needs of a complex organization are viewed as a hierarchy."*

Faced with a multitude of choices, the system designer must first define the user requirements and then select an appropriate communications system. Manufacturing systems can be characterized several different ways. A simple characterization that will translate key manufacturing requirements into useful communications features is needed.

Traditionally, the information needs of a complex manufacturing organization are viewed as a hierarchy, with each level having its own communications requirements.

The first level, factory floor, works with data that controls the factory processes.

Information flowing to factory floor machines consists of part programs and commands to control the machines. Information relayed back across the network describes machine status, alarms, inspection data and work performed by factory floor workers.

At the second level, the plant and departmental level, summary information is received from the factory floor. This data may include total machine and operator output and exception conditions. In addition, workers at this level receive schedules and directions from the third, or corporate, level.

The corporate level works with plans and strategies and is given output on the overall status of the manufacturing operation. Processors at this level generate plans and financial projections, which are conveyed to the lower levels as production schedules.

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MAP from **page 15**

its production facilities.

Three other aerospace firms — Boeing Computer Services, Inc., Northrop Corp., and Lockheed Corp. — have all signaled their interest in the MAP movement.

The 97,000-worker McDonnell Douglas comprises a myriad of smaller companies. Those companies manufacture equipment for use in applications ranging from combat to computer centers.

McDonnell Douglas has chosen to begin educating its personnel on data communications topics such as Open Systems Interconnect, MAP, Technical and Office Protocol (TOP) and network design and implementation.

> *"Applications range from combat to computer centers."*

In March, Peter Carrillo, a senior specialist with McDonnell Douglas' Cypress, Calif.-based network technologies group, attended a MAP seminar at Arizona State University. The seminar was given by Zatyko Associates, a Tustin, Calif.-based communications consulting and training firm.

"I went to the seminar looking for a comprehensive MAP overview, and that's exactly what I received," Carrillo recalled. "I thought the overview was presented quite well, given the time frame involved."

After returning from the seminar, Carrillo queried people at all California-based McDonnell Douglas companies to determine their interest in attending a MAP overview course.

Zatyko held a pair of four-hour executive briefings at McDonnell Douglas designed to explain MAP to middle and upper management. The consulting firm then put on a pair of two-day MAP overview workshops suited for engineers as well as blue collar workers. All four sessions were held at the aircraft maker's Cypress, Calif., facility. Identical seminars were held in St. Louis. The course instructor at both sites faced standing-room-only crowds.

Carrillo said the executive briefings included a MAP standards overview, a discussion of broadband networking concepts and a carrier-band networking primer. The MAP network pilot, which will utilize Version 2.1 of the factory communications specification, is viewed by the company as another means of educating key employees throughout the corporation on the capabilities of a MAP network.

Wayne Hanna, telecommunications director for McDonnell Douglas Aircraft Co. in St. Louis, said the test pilot, scheduled to run until at least the end of this year, will allow the company to evaluate new MAP products shortly after they become commercially available.

"The purpose of this project is to involve people from other McDonnell Douglas companies with MAP," Hanna explained. "They can visit the pilot and review its characteristics with respect to the manufacturing needs of their respective companies."

Hanna would not give further details of the project.

There is an important difference between the way automakers and aerospace companies implement new factory technology, Hanna asserted. "[Aerospace companies] have more integrated engineering, design and manufacturing systems," he stated. "For McDonnell Douglas to install a MAP network, we would have to take out a segment of an existing network, replace it with a MAP net and not disrupt the operation of the overall network."

Hanna will also be determining how well vendors have fared in developing factory gear that works with similar equipment from other vendors. "It is our hope that the MAP/TOP movement makes vendors produce interoperable products that comply with industry standards," he explained.

If vendors do not offer products that are compatible with other vendors' products, Hanna will be faced with choosing between MAP-compatible products and proprietary products that may be superior to their counterparts.

The telecommunications director said he is not pleased with vendor efforts to introduce MAP-compatible products quickly. "We are finding that moving MAP products into our manufacturing environment will take more time than we originally planned," he said. This can be partially attributed to the amount of time vendors require to educate their field staffs about products that use a new technology.

Hanna said the test and evaluation process that MAP and TOP products will be subject to at McDonnell Douglas is not unique. "The precautions we take with MAP and TOP products are no different than any precautions we would take with any new technology, whether it was a telecommunications technology or a factory floor technology."

Integration from **page 15**

This hierarchical information structure parallels the organizational hierarchy of large manufacturing corporations. In such a scenario, the product functions are separate from corporate functions such as marketing and finance.

Not all manufacturing companies have distinctly separate functions that can be mapped using this three-tier model. The size and complexity of a manufacturing establishment determines the nature of the organization.

As volume and product variability increase, organizational structure and information needs change. A manufacturing organization should be identified by size and type of organization before its corresponding communications requirements are identified.

These characterizations form a spectrum with small, tightly incorporated facilities at one end, and large, loosely integrated facilities at the other end. Small, tightly incorporated facilities consist of single, self-contained work cells. This type of company generally manufactures low volumes of a variety of parts and, in most cases, the cost per part is relatively high. Organizationally, the facility is tightly incorporated with several functions being performed by the same person. The proximity of manufacturing stations makes communications easy.

The large, loosely integrated system consists of distributed manufacturing facilities geared toward medium- or high-volume part production manufacturing. Part costs are generally lower than at smaller facilities. Manufacturing functions are distributed into groups with separate and distinct responsibilities. Communications between these two groups must be carefully structured.

The data communications characteristics of these two types of manufacturing methods are very different. The small, tightly incorporated facility has very little separation of manufacturing functions. A single network may serve the entire facility. The same processors that are used for financial planning may be used to handle product design work as well.

The small size of the facility makes noise a common problem. Information is generally centralized with terminals accessing processors in a central data processing facility. Information from a design data base can be downloaded to computer numerical controller machines on the factory floor. Data security is not a key issue in this type of data transmission.

Timely information is required as factory equipment operation status and alarm systems are connected to the same network. Delays in the manufacturing cycle must be minimized by using a schedule of priorities. The traffic flow over a network in a small manufacturing facility is erratic because the network is used for few file transfers. With so few stations, compatibility with existing equipment is not a major problem. Because of the small size of these facilities, systems are sensitive to cost.

Next week, the data communications characteristics of large corporations will be examined. Important considerations that must be kept in mind when the user considers a factory local-area network will be explained.

MAP/TOP MEETINGS

The following is a partial list of Manufacturing Automation Protocol-, Technical and Office Protocol (TOP)-, and related committee meetings, conferences and workshops.

Aug. 6
TOP Product Data Subcommittee
Speaker: Herbert Ryan
Location: Seattle
Sponsor: TOP Technical and Test Review Committee
Contact: Victor Lukasik, Boeing Computer Services, Inc.
(206) 763-5457

TOP Electronic Mail Subcommittee
Speaker: Victor Lukasik
Location: Seattle
Sponsor: MAP/TOP users group
Contact: Victor Lukasik, Boeing Computer Services, Inc.
(206) 763-5457

Aug. 7
TOP Virtual Terminal Subcommittee
Speaker: Victor Lukasik
Location: Seattle
Sponsor: TOP Technical and Test Review Committee
Contact: Victor Lukasik, Boeing Computer Services, Inc.
(206) 763-5457

Aug. 11
Ansi X3T3.5
Speaker: Lloyd Hollis, IBM
Location: Palo Alto, Calif.
Sponsor: American National Standards Institute
Contact: Lloyd Hollis
(919) 254-0292

Aug. 12
MAP Technical Review Committee
Speaker: Tom Brushaber, chair
Location: GM Technical Center
Sponsor: MAP Task Force
Contact: Tom Brushaber
(313) 456-2234

Aug. 14
MAP Task Force
Speaker: Steve Dillion, chair
Location: GM Tech Center Warren, Mich.
Sponsor: MAP Task Force
Contact: Steve Dillion
(313) 575-2843

Aug. 18 to 22
ANSI X3S3.3, X3S3.7
Speaker: Lyman Chapin and Catherine Dally committee chairpeople
Location: Boulder, Colo.
Sponsor: American National Standards Institute
Contact: Lyman Chapin
(617) 366-8911

Aug. 19-21
ITI Manufacturing Communications Workshop
Speaker: Michael Shumacher
Location: Ann Arbor, Mich.
Sponsor: Industrial Technology Institute
Contact: Michael Shumacher
(313) 769-4363

COMMUNICATIONS MANAGER

> "One of the things you want to find out when someone says they are an authorized dealer is just what that means. It might be that they have to carry a certain number of spare parts; or their technicians have to be factory-trained; or they have to have one technician for every line installed. It might just mean that they have enough money in the bank to ensure that the vendor will get paid.
>
> **Ian Angus**
> president
> Angus Telemanagement Group

▶ DISTRIBUTORS

Let's make a deal?

Users who decide to take the purchase plunge with a distributor would be wise to test the waters first.

BY MICHAEL FAHEY
Staff Writer

Users that plan to buy communications equipment from a distributor rather than from the manufacturer should look for a financially stable dealership that employs knowledgeable personnel and has a satisfactory maintenance and repair service record.

"We don't have any set guidelines for doing business with a distributor, but we will get a Dun & Bradstreet rating on them to make sure they are financially firm," said Dennis Johnston, operations manager at New York City-based Ebasco Services, Inc.

"We've been in the business long enough that we've developed relationships with some distributors, and we know the things that they do well and the things they don't do well," he added.

When dealing with new distributors, Johnston is especially wary of a company whose personnel is not familiar with the equipment they sell.

"Some distributors just sell out of the catalog," Johnston said. "It's all right to buy out of the catalog if you are buying something that you get by the cubic yard. In data communications, though, things are changing very quickly, and really knowing a piece of equipment's capabilities is very important."

Johnston explained that because his company has a large Burroughs Corp. system, some distributors believe that every product billed as being Burroughs-compatible will automatically fit his needs.

"That's just not true," he said. "There is no across-the-board compatibility." Bill Spindell, manager of data communications at Castle & Cooke in San Jose, Calif., is equally leery of dealing with distributors whose personnel is not sufficiently familiar with the equipment they sell.

"I want to do business with people who are aware of the inner workings of the equipment they sell," he deciared. "I don't want someone to just drop off a brochure."

Spindell also said that a good distributor will have a close relationship with the manufacturer and be able to deliver and install equipment on schedule.

Spindell said he has long been doing business with Paul Person Associates, a Northern California communications dealer, because the company understands its customer's needs and the capability of the equipment it sells. In addition, Spindell said, Person Associates is able to acquire and promptly deliver the equipment promised to customers.

Ian Angus, president of Angus Telemanagement Group, a Toronto-based consulting company, advised users to check out a number of distributors before selecting one.

"If you get two or three bids, you can compare them and then start asking questions," he said.

According to Angus, there are no hard and fast criteria for evaluating distributors.

"Even the term authorized dealer is confusing, Angus said. "One of the things you want to find out when someone says they are an authorized dealer is just what that means. What criteria does the manufacturer use in making someone an authorized dealer?

"It might be that they have to carry a certain number of spare parts; or their technicians have to be factory-trained; or they have to have one technician for every line installed," Angus said.

"Or it might just mean that they have enough money in the bank to ensure that the vendor will get paid."

Users who are in the market for a large telecommunications system are usually better off dealing directly with the manufacturer or with a large distributor, Angus said.

"I have a bias toward the large distributors and the manufacturers because this business is extremely volatile," he explained. "The real problem isn't your vendor going out of business. The worst case is when the vendor service slowly declines. You can't break the contract because you don't have a violation, but you don't get the service."

Check track records

Angus advised users who are considering doing business with a large, nationwide distributor to check the distributor's track record in the area where the user is located.

"I can get great references out of Tallahassee, Fla., but that isn't going to do me much good if I am in Michigan," Angus said. "You have to ask if anyone in the local office has installed one of these things."

Vaughan Logan of Mission Computer Service, a Sunnyvale, Calif.-based computer time-sharing company, agreed with Angus on the importance of getting local references.

"I ask for a customer reference list. Words travels fast in the [Silicon] Valley," Logan said.

GUIDELINES

MARGIE SEMILOF

Conquering network nightmares

Not every strategic corporate communications plan takes networking needs that spring up overnight into account. In fact, many communications managers claim the task of picking a product to serve an unexpected application tops their anxiety lists.

One reaction is to wade into the endless reams of product literature that pile up.

However, picking through these brochures is a time-consuming job that is further bogged down when the manager has either a small planning staff or no staff at all. When asked for hints on their quick-fix buying techniques, most managers admitted they resorted to Band-Aid tactics.

For example, lots of managers buy only from tried-and-true vendors because they do not have time to shop around. This might not be such a bad idea if your company does a lot of business with this vendor and therefore has some leverage. But you may be doing yourself and your company a greater service to check out two or three of the company's competitors too. Someone else's product may fit better into your overall long-range network plan.

Some communications managers will immediately turn to the big vendors because they seem more reliable. But many of the communications applications that need immediate accommodation are very specialized. There are many smaller companies that zero in on specialty areas and also offer the product for less than bigger, more well-known companies.

Probably the best way to choose products in a catch-as-catch-can situation is by turning to other users with similar applications. This may be the best single argument for joining a users group or association.

Unfortunately, communications departments are often treated like utility companies. They must be on hand to install equipment and provide support, no matter what. The trick is to avoid fitting an application to a technology, rather than the reverse, and to avoid buying from the vendor that offers the best lead time.

PEOPLE

James Melsa is president-elect of the Institute of Electrical and Electronics Engineers' Control Systems Society. He will assume control of the organization in 1988.

United Telephone System, a division of United Telecommunications Inc., announced appointments of three executives. **Richard Cashwell,** currently president of United Telephone System's Midwest group, will become president of United Telephone System's Southeast group. Cashwell succeeds **W.W. Hill,** who has elected to retire.

Dave King, currently president of United Telephone Co. Northwest, will succeed Cashwell as Midwest group president.

J. Darrell Kelly, currently United Telephone Systems, Inc. senior vice-president of operations, will become vice-president of governmental affairs, regulatory affairs and public relations for the company.

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NEW PRODUCTS AND SERVICES

See inside for:
▶On-line tariffing product review
And in the Aug. 18 issue:
▶Network management and test equipment

▶ CHANNEL TRANSFER DEVICE

T-Bar switch bows

Designed for IBM mainframe computers.

BY JIM BROWN
New Products Editor

WILTON, Conn. — A device that allows users to switch bus- and tag-compatible devices between two mainframe channels was introduced here by T-Bar, Inc. The firm is positioning the product as an entry-level offering to its line of matrix switches and other computer switching equipment.

The T-Bar 3001 Channel Transfer Switch is plug-compatible with IBM 3090 series, 3080 series, 4300 series and other systems equipped with IBM 360 or 370 cable interfaces.

The device switches peripheral control units like tape drives, tape cartridges, laser printers, terminal controllers and front-end processors between two mainframe channels.

Typical applications

The 3001 has a built-in power supply and one switchable port. A typical application would be attaching a terminal controller to the 3001's switchable port in order to switch its output between two separate mainframes or between two channels on a multiple CPU mainframe. Other applications include sharing a printer or a tape controller.

"You could switch a whole string of controllers or just one controller," said Bill Anderson, T-Bar product manager for computer switching products. The device, he added, can also be used in situations where backup protection is needed in the event one CPU crashes or goes off line.

The device does little more than switch between mainframe channels. It allows signals to pass through without modification. "It's totally passive. We don't do any redriving in this," Anderson said. The device's switching mechanism is manually operated from a toggle switch on the panel. However, a remote toggle switch box can be connected to the main unit over a cable of up to 200 feet in length.

Anderson said the unit operates at speeds of up to 1.5M bit/sec for most applications and up to the 3M bit/sec transfer speed of control units. The $2,500 unit can be stored on a shelf or under a raised computer room floor.

PRODUCTS & SERVICES

Data encryption

A customized communications package that allows banks and other institutions to encrypt, monitor and audit all personal computer transmissions is available from **Western Union Corp.**

The product, which consists of a plug-in board and software, was developed by Western Union and American Teleprocessing Corp. (ATC). The customized version of ATC's **Proto.Call board and software** restricts system access through user identification numbers and passwords. It also provides a user profile allowing a systems administrator to determine which commands or functions each user is allowed to perform.

The product also encrypts all messages originating or terminating at the personal computer according to the Data Encryption Standard and monitors all communications to and from the personal computer.

The board plugs into an expansion slot in an IBM Personal Computer AT, XT or compatible system with a minimum of 384K bytes of random access memory. Two ports allow for dedicated line or dial-up access.

The software runs in the background, allowing the user to send or receive messages while working with other software.

The product costs $1,800.

Western Union Corp., *1 Lake St., Upper Saddle River, N.J. 07458 (201) 825-5000.*

Twisted-pair local net

A software-based network for the IBM Personal Computer line has been introduced by **Applied Knowledge Groups, Inc.**

Knowledge Network works with memory-resident IBM PC-DOS operating system software and modular telephone cables to connect up to six computers via RS-232-C serial ports.

To connect to the network, users plug in ordinary unshielded telephone wires and modular connectors.

Clusters of computers can be connected via modems or additional serial cards. The baseband packet-oriented network will operate on various network topologies. The maximum data transmission speed is 57.6K bit/sec.

The network provides for full data security and data integrity, including transmission error checking, data acknowledgment and write protection.

No central file server or dedicated personal computer is required.

The network requires an IBM Personal Computer or compatible with DOS Release 2.1, 3.1 or higher, 48K bytes of random-access memory and 80K bytes of disk storage.

Applied Knowledge Groups, Inc., 1622 El Camino Real West, Mountain View, Calif. 94040 (415) 965-1300.

▶ PHONE SYSTEMS

Toshiba enhances Strata key systems

TUSTIN, Calif. — Toshiba America, Inc.'s Telecommunication Systems Division recently unveiled enhanced versions of its microprocessor-based Strata electronic key telephone systems.

The Strata Se, VIe, XIIe and XXe key systems now have internal power supplies and offer new software and added features. The enhanced systems operate with Toshiba's Strata electronic telephones, which were also enhanced to provide hearing aid compatibility, wall mounting, operator's headset connection and an improved speakerphone.

Call transfer, camp-on, exclusive hold, intercom automatic call-back and trunk queuing features were added to the three-trunk, eight-telephone Strata Se. The six-trunk, 16-telephone Strata VIe now supports six-digit toll restriction, executive override, automatic line preference, a privacy or nonprivacy option, call forwarding and redial of saved number functions.

Both the 12-trunk, 32-telephone Strata XIIe and the 21-trunk, 56-telephone Strata XXe models have been enhanced with 25 new features. Included among those features are account identification for redialed numbers, flexible key assignment, alphanumeric messaging, a station message detail recording forced account code option, trunk-to-trunk connections, amplified conference call, station hunting and ear and mouth tie lines.

The Strata Se and Strata VIe systems are currently available from Toshiba's dealership network. Installed Strata Se and VIe system prices range from $325 to $350 per line. The Strata XIIe and Strata XXe systems are being shipped and range in price from $400 to $450 per line including installation.

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Opinions

TECHNOLOGY

BRIAN JEFFERY

System 36: The shocking truth

It's amazing how easy it is to be an industry expert. Knowledge, experience and contact with end users is helpful, but the real requirements are an office, a telephone, a printing press and an ample supply of buzzwords. Suitably equipped, one can bamboozle the market for years with such unlikely propositions as "Unix is going to take over the world" and "Office automation is the way to go," and with such empty buzzwords as "micro-to-mainframe links" and "departmental resource processing." Becoming an IBM expert and spreading rumors is a variation of this.

The sad reality is that many consultants and analysts are in a dream factory that resembles Hollywood at its worst. Probably the most glaring example is the debate over the IBM System/36. Judging from the tone of this debate, the System/36 is weak, underpowered, poorly supported and generally a piece of junk. Yet IBM has sold more than100,000 units; there is no sign of a decline in sales; and, apart from a small minority of disgruntled corporations, System/36 users continue to profess themselves happy with it. Users are asked to believe that IBM has foisted a useless product off on them and has succeeded in brainwashing them into liking it.

The world doesn't work that way. Granted, IBM has occasionally marketed products that are somewhat less than state-of-the-art. The 8100 series springs to mind. However, IBM never sold more than 15,000 units, and it did not come near rivaling the popularity of the System/36.

The idea that IBM is not standing behind the System/36 does not go along with the company's actions. Since the product's introduction in 1983, IBM has pulled out all the stops to integrate the System/36 into its office automation environment.

Last January, for example, IBM started building support for key applications, such as Personal Services, directly into the System/36 operating system. Over the last three years, Big Blue has made more than 250 product introductions that improve System/36 support in mainstream IBM office automation applications.

This doesn't fit the scenario of the many analysts and consultants who describe the System/36 as a stopgap system. Even if one attributes Machiavellian intentions to Big Blue, it makes no sense to believe that IBM would commit so many resources to a stopgap system. Nor does it make sense that IBM would create trouble for itself by making the product a vital component of its office automation picture, only to turn around and dump it a few years later.

IBM started backing off from the 8100 series, a less vital product, more than three years before its public anouncement earlier this year that it would not provide further hardware enhancements for the system. This pattern is very different from the way IBM has handled the System/36. All indicators show a strong and continued commitment to this system.

So why are so many analysts wrong? The answer is depressingly simple. Too many people are talking concepts and not enough are looking at what is happening in the marketplace. Close to two-thirds of the System/36s installed by large users are being used not as departmental resource processors, departmental systems or office automation systems, but as remote site machines.

Most of the volume orders for System/36s have been from companies or government users that are putting the systems out in geographically distributed facilities. Volkswagen of America, Inc., for example, is putting them out in dealerships. In these remote applications, the System/36 scores high on such issues as reliability and user friendliness, which are more important than technical functionality for offices that do not have a skilled data processing staff.

Another primary requirement for remote applications is overnight batch processing — something the System/36 does well. This is not a new market. Fortune 500 companies were using the older System/34 in the same role for six years before the System/36 was introduced.

What then of the new low-end IBM 4300 series processors that will supposedly blow the System/36 out of the water? First, the 4300 series, even with a user-friendly, downsized version of IBM's VM operating system, is unlikely to cut into the System/36's popularity as a remote site machine.

Second, the System/36 is going to a more powerful configuration with more memory and disk storage and a smaller footprint. IBM claims that its Advanced 1-Million Bit memory chip technology for the 36 and 38 boosts

See **System 36** page 30

Jeffery is research director at the International Technology Group in Palo Alto, Calif.

NETWORK POLICY

JEFFREY ROTHFEDER

The 'antisnoop act'

What a difference eighteen years makes.

When the Omnibus Crime Control and Safe Streets Act was passed by Congress in 1968, its strict provisions were hailed as landmark legislation that had finally codified the Fourth Amendment's guarantee against unreasonable searches. The act ensured that citizens could not be surveilled unless a definite felony was suspected.

Now that act, which prohibits eavesdropping on conventional telephone and mail communications, is rarely praised, and more often than not is lambasted as impotent and backward in the face of massive technological change.

In 1968, electronic mail systems and private corporate computer networks were used so little that they were hardly a factor in communications; consequently, data transmissions received no protection from the Omnibus act. The result of this narrow positioning of the legislation is that most communications over private corporate networks, including either the paper records of messages transmitted or the on-line messages themselves, may now be intercepted by either private individuals or the government without fear of prosecution.

And intercepted they are. An eye-opening October 1985 study conducted by the Congressional Office of Technology Assessment on surveillance by federal agencies found that no computer network, regardless of the efforts of its operators to prevent unauthorized access, is free from the prying eyes of the government these days.

According to the report, 25% of all federal agency departments that responded indicated some present or planned use of private network crashing techniques, including intercepting E-mail, picking off satellite transmissions and monitoring computer usage.

Moreover, House Judiciary Committee staff members looking into this issue said that this group of data interceptors is just the tip of the iceberg when private surveillance and the federal agency departments not responding to the survey are factored in.

"Our own ad hoc investigations show that breaking into private computer networks for fun and profit is a favorite game among the government and corporate sectors in this country," an aide said.

Hit with the unavoidable fact that communications on corporate computer networks, particularly E-mail messages, have become free for the taking, civil libertarians and constitutional watchers in Washington, D.C. became panicky two years ago. At that time, Rep. Robert W. Kastenmeier (D-Wis.), chairman of the House Judiciary Subcommittee on Courts, Civil Liberties and Administration of Justice, held a series of hearings on privacy and the state of national security, timed to coincide with the date of George Orwell's novel, *1984*. The sessions focused on new communications technologies and how to reconcile them with meager privacy protections.

"For at least a short time we threw aside all ideological labels and talked about gaps in the existing 1968 Wiretap Law," one congressional aide observed.

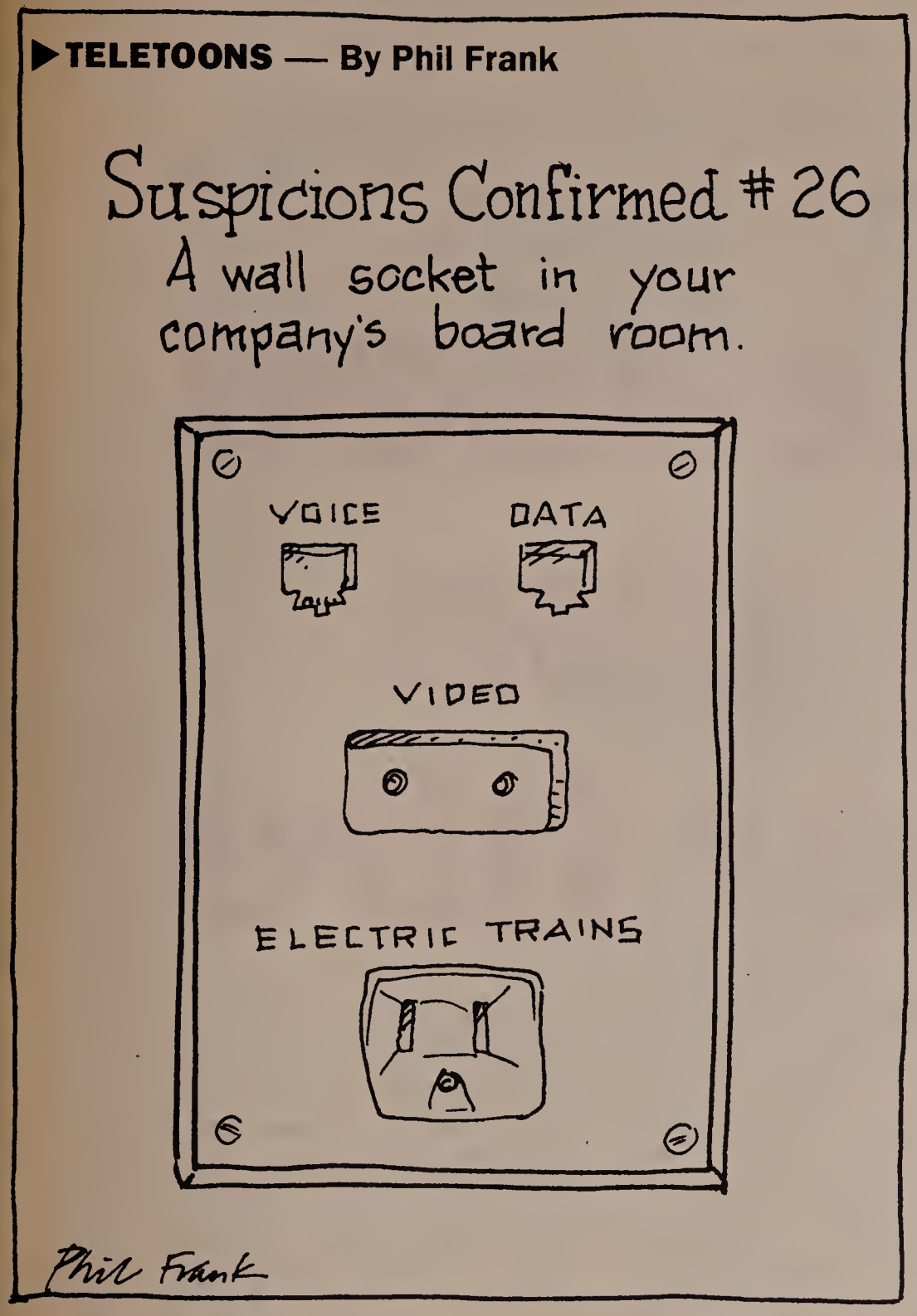
For those involved with electronic communications, the hearings produced significant results. Rep. Kastenmeier drafted a bill, which he calls "an electronic privacy law", that extends the protection of the 1968 Omnibus Crime legislation to newer forms of communications. This bill, The Electronic Communication Privacy Act of 1986, was passed in the House last month by an overwhelming majority.

The bill protects corporate networks and the privacy of E-mail in two ways. First, it makes it a felony for individuals to intercept private electronic communications, including electronic messages in transit between or residing in pri-

Rothfeder is a free-lance writer based in Wyckoff, N.J.

Opinions

▶TELETOONS — By Phil Frank



vate-sector computers. (An earlier piece of computer crime legislation, tacked on to a 1985 budget bill, had already made it illegal to surveil computer systems operated by the federal government or by certain financial institutions.) Under the Kastenmeier bill, law-enforcement officials are allowed to intercept electronic communications only after obtaining a court order from a judge who has determined that the interception may provide evidence of a federal felony.

Second, the proposed bill makes it a misdemeanor to break into any E-mail storage system holding hard-copy facsimiles or on-line versions of messages either before or after delivery. Again, law-enforcement officials are permitted to read these messages only with a court order.

Communications users groups have been particularly supportive of the bill as it works its way through the mark-up process in Congress. "Laying the groundwork now for protecting electronic messaging technology will prevent problems in the future," says Michael Cavanagh, executive director of the Electronic Mail Association in Washington, D.C.

Furthermore, the bill includes a bonus for private network users beyond the protection it affords them: For the first time, so-called private carriers are put on an equal footing with common carriers in a proposed or approved federal statute.

Much of the credit for this goes to the activities of the International Communications Association (ICA), which fought long and hard. "The authority given to common carriers under existing statutes makes it appear that only they provide communications services and capabilities, but that's no longer the case," Brian Moir, Washington counsel for the ICA said.

"Many users own and run their own networks now and they need to have the same rights — such as the ability to keep network records and to protect against illegal infringement of the network — as common carriers do," adds Moir. "Those rights were not readily clear in the earlier versions of the bill. But the final bill goes a long way, for the first time, toward giving communications managers the

See **Antisnoop** page 30

MANAGEMENT STRATEGIES

CHARLES ROBBINS AND GREG CIPRIANO

Smoothing the T-1 transition

T-1 has evolved out of the postdivestiture environment into an attractive transmission technology for private network applications. As a result, a plethora of T-1-based products and services has appeared, and users are faced with a multitude of vendor solutions and claims. Many times, vendor claims and hype supercede the more practical issue for communications managers: How should users manage the incorporation of T-1 technology into their networks?

The typical scenario goes like this. A decision to migrate to T-1 is made based on a number of critical requirements generated by such factors as network planning and applications. Vendor proposals are solicited and presented, and future T-1 product capabilities are evaluated in detail. Finally, the vendor is selected.

At this point, the tendency of the communications manager is to breathe a sigh of relief. After all, a great deal of staff and consultant effort has been expended to make a difficult procurement decision. One would think that with the vendor on board, everything is under control.

Actually, from a project management perspective, this is often when problems occur. What can users do to prepare for the implementation process? After the initial vendor selection has been made, there are many details to consider to ensure a successful migration to a T-1-based network.

The T-1 network bought today will be with the organization for many years. In order to evaluate properly the selected vendor's equipment, the communications manager should have a thorough pilot evaluation and acceptance phase as a critical part of his project plan. This pilot phase should be implemented whenever possible. It is a vehicle for testing vendor claims of product functionality; it allows the communications manager to bring his staff up to speed; and it enables him initially to measure the level of vendor support. The pilot phase can also be an excellent environment in which to simulate faults in the T-1 network and to test the vendor's basic network management and diagnostic capabilities.

This allows the user's operations people to get early training and exposure to working in a T-1 environment.

Also, users should be aware that in the intensely competitive market for T-1 equipment, vendors may promise unrealistic delivery dates to win business. Users should protect themselves by incorporating into their contract penalty clauses for late deliveries. They should not make the mistake of placing their bets on the winning vendor's solution. And users must make sure they have the second-place vendor in a backup role, because that second-place finisher may become the provider of their network equipment.

T-1 is a relatively new technology to the data communications world, so the pool of people with hands-on T-1 experience is still developing. Users must beware of vendors that stress their national customer service capabilities as a selling point. Their strengths are probably at the home office and at the pilot operation. Users cannot assume that the knowledgeable applications engineers and experienced service people at the vendor's pilot sites will exist at all their remote T-1 locations. Therefore, users should plan on developing their own in-house technical expertise and ongoing training program in order to stay in control of their network.

In tracking all the details of the implementation process, users should not forget that the installation of T-1 equipment may not be as simple as the vendor leads them to believe. The installation of high-end T-1 multiplexers from the user perspective is quite similar to that of installing the most recent generation of digital private branch exchanges. There are many facilities factors that should be considered, including floor space, power and environmental considerations, interconnect wiring and specialized test equipment.

These mundane and often-overlooked issues have been known to delay a poorly planned project by several months or more.

Also users must keep in mind

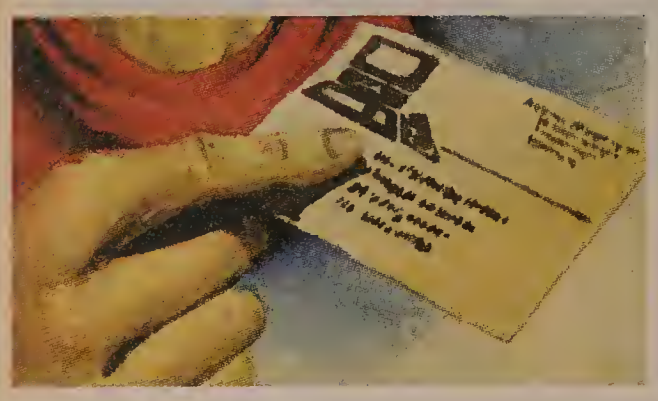
See **T-1** page 30

Robbins and Cipriano are principals of Strategic Market Trends, a communications consulting company in Stoughton, Mass.

NETWORK WORLD

Features

July 28, 1986



▶ HIRING

Leased gun for hire

BY ALAN STRONG
Special to Network World

Wild as it was, the old West couldn't hold a candle to the communications field in terms of explosive growth. The past few years' stampede of new technologies and applications has made communications networks increasingly visible and important. But riding herd on skilled personnel as they develop, operate and maintain a company's communications network is enough to make a manager saddle sore.

Currently, there is a nationwide shortage of skilled communications professionals. An inability to find qualified personnel quickly can limit the effectiveness of a company's networks and lessen its productivity.

Traditionally, network managers have envisioned just two solutions to this problem: hiring employees directly and leasing independent contractors. There is, however, a third alternative. This solution, called lease-for-hire, offers managers a middle ground between the complex risks of straight hiring and the expensive convenience of traditional contracting. Used in tandem with independent contractors and straight hiring, a good lease-for-hire program can provide network managers with an important personnel tool.

Here's how a lease-for-hire system works at Commercial Programming Systems (CPS), a lease-for-hire firm based in Los Angeles. First, network managers at the client company tell CPS exactly what they need: what systems the leased employee must know, how much experience and knowledge of an industry he should have and what the company would pay an employee with comparable skills.

Then an account executive, working through a recruiter, conducts a nationwide search to locate a suitable candidate. Typically, a qualified candidate can be found in three to six weeks. If, after interviewing the prospective leased employee, the client company's managers are satisfied, the leasing company hires the person as its employee at a salary commensurate with what the client company would pay someone with comparable skills and experience. Benefits are usually provided by the lease-for-hire firm and are generally equal to those provided by the client companies.

CPS next leases the employee to the client at an hourly rate approximately equal to that of an indepen-

Continued on **page 26**

Strong, a former president of the Los Angeles chapter of the Data Processing Management Association, is the founder and president of Commercial Programming Systems, a lease-for-hire firm based in Los Angeles.

Hunting telecommunications professionals? Lease-for-hire firms can bring 'em back alive.

From **page 24**
dent contractor. If at any time company managers are dissatisfied with the employee, the employee is replaced immediately, at no extra charge.

At the end of a preset evaluation period, typically nine months, the client company and the communications specialist know each other well. If the client company likes the leased employee's work, it has the option to offer him a permanent job; otherwise, he remains an employee of CPS and is free to continue with the client if the client and leased employee agree, or he may move to a new assignment.

In either case, the client company usually pays no additional fee or service charge. If the client decides to extend an offer to the leased worker, CPS acts as an intermediary between its employee and the client.

Since he has proven skills, the leased employee has become more valuable to the client and usually commands a higher salary at the end of the evaluation period. This can put the communications professional farther ahead in salary than he would have been had he been hired directly. It also benefits the client, who gains an experienced employee with proven skills.

While working for CPS, the telecommunications professional is under no contractual obligations to the client or CPS. Like the client, he can terminate the assignment at any time. From there, he may ask for a new assignment or give his notice to CPS and pursue a position on his own.

Communications and data processing professionals are leased to numerous private and public employers, including companies in industries ranging from banking and financial services to manufacturing. What those diverse clients share is a desire to move quickly on a telecommunications or DP project. They are not in the communications or computer industries; they're in other industries and are using telecommunications skills and computers as tools.

They need people quickly because their business depends upon a smooth-running communications system, not just to save money, but to help them make money.

The Department of Information Services for the city of Los Angeles offers a good example of how and why an organization might use a lease-for-hire program. A few years ago, Los Angeles city managers were looking ahead to putting a personal computer, as standard equipment, onto every desk, alongside the telephone.

Managers anticipated that by the early 1990s, the number of personal computers owned by the city would increase seven- to eightfold. Those thousands of computers would be linked by a myriad of communications networks, which would increase in size, number and complexity.

In Los Angeles, that task is made more complex because the city's 40 departments use a wide variety of software at a mixture of local and remote terminals. These are spread over a huge geographic area serviced by two telephone companies. Responsibility for management and troubleshooting of the city's communications networks had largely fallen into the cracks between three separate departments that shared responsibility for developing and maintaining communications software and equipment.

Hoping to develop a coherent, lasting solution that would ease their growing pains, city managers established a Network Problem Management unit within the operations department.

Finding the necessary communications specialists was difficult. Los Angeles relies primarily on the IBM Systems Network Architecture and Vtam network architecture to support Information Management System-, CICS- and Disoss-based applications, but it also uses asynchronous protocols to communicate with police and fire department mobile terminals. The specialists would have to be extraordinarily versatile.

"It was clear that office automation was taking off [and] that personal computers were going to become very commonplace," recalls Bill Hand, an assistant general manager in charge of operations and a driving force behind the Network Problem Management unit.

"We wanted to improve our ability to deal with communications network problems, but we didn't feel that we had the people within the organization who could play a leadership role, other than our systems programmers who were designing networks. They weren't really interested in switching jobs, and besides, they were already scarce enough."

Hand considered importing systems programmers from another department, but they were working on other projects and would have been difficult to replace. Independent contractors could have filled the gap temporarily, but the city needed communications specialists on a permanent basis. Hiring new people might have taken months and would have left the city vulnerable if the new employees couldn't handle the job. Hand decided to try the lease-for-hire system.

Within five weeks, the Department of Information Services had leased two communications specialists from CPS. Both had worked at a large insurance company, where they had acquired extensive network troubleshooting and maintenance experience. Two years later, both still work for the city and are still leading the Network Problem Management project.

Under the lease-for-hire system, the city had much of the flexibility of standard independent contracting. The leased communications specialists, for example, did not have to go through normal personnel or civil service hiring processes. And, because they were not city employees, the Department of Information Services would have had no obligations if their work had been unsatisfactory or if the department had abandoned the new project. Yet city managers also knew that if they liked the specialists' work, they would have the option to hire them permanently, at no additional cost.

Hand says situations where managers need to find people with very specific skills are typical of an evolving technical personnel environment. "As data processing and communications have become more diverse and specialized," Hand says, "we've found that we're not out there looking for Cobol programmers with two years' experience in large numbers, as we once were. We're looking for programmers or analysts who know information center products, who know Disoss or microcomputers, or who know how to support DEC command/control systems. We're looking for people with more definitive, more specific skills. They're not the kind who are out there in droves.

"We've got to seek them out; we can't always find them through normal personnel channels. For us, there was definitely an advantage to being able to convert people to regular employment at the end of the evaluation period," Hand continues.

To be successful, a lease-for-hire business must strive for high turnover; the goal is to get leased employees onto the payroll of the leasing company. In most cases, clients lease the first professional they interview, and most leased employees are eventually transferred to the client's payroll — that is, they are offered, and they accept, a permanent job with the company.

Many communications professionals like the lease-for-hire system because they get a chance to try out an employer. They also like knowing that managers will evaluate them on the basis of months on the job, rather than an impersonal resume and a brief interview with personnel. By the end of the evaluation period, a leased employee can respond confidently to a job offer, knowing that he truly wants to work for the company.

Not a cure-all

To be sure, network managers should never look at a lease-for-hire program as a cure for all their hiring ills. In Los Angeles, Department of Information Services managers, working with the city's personnel department, have developed an extensive internship program to recruit and train recent college graduates for entry-level positions. By providing those young professionals with comprehensive communications experience, this program ensures that there will be a steady supply of lower level personnel.

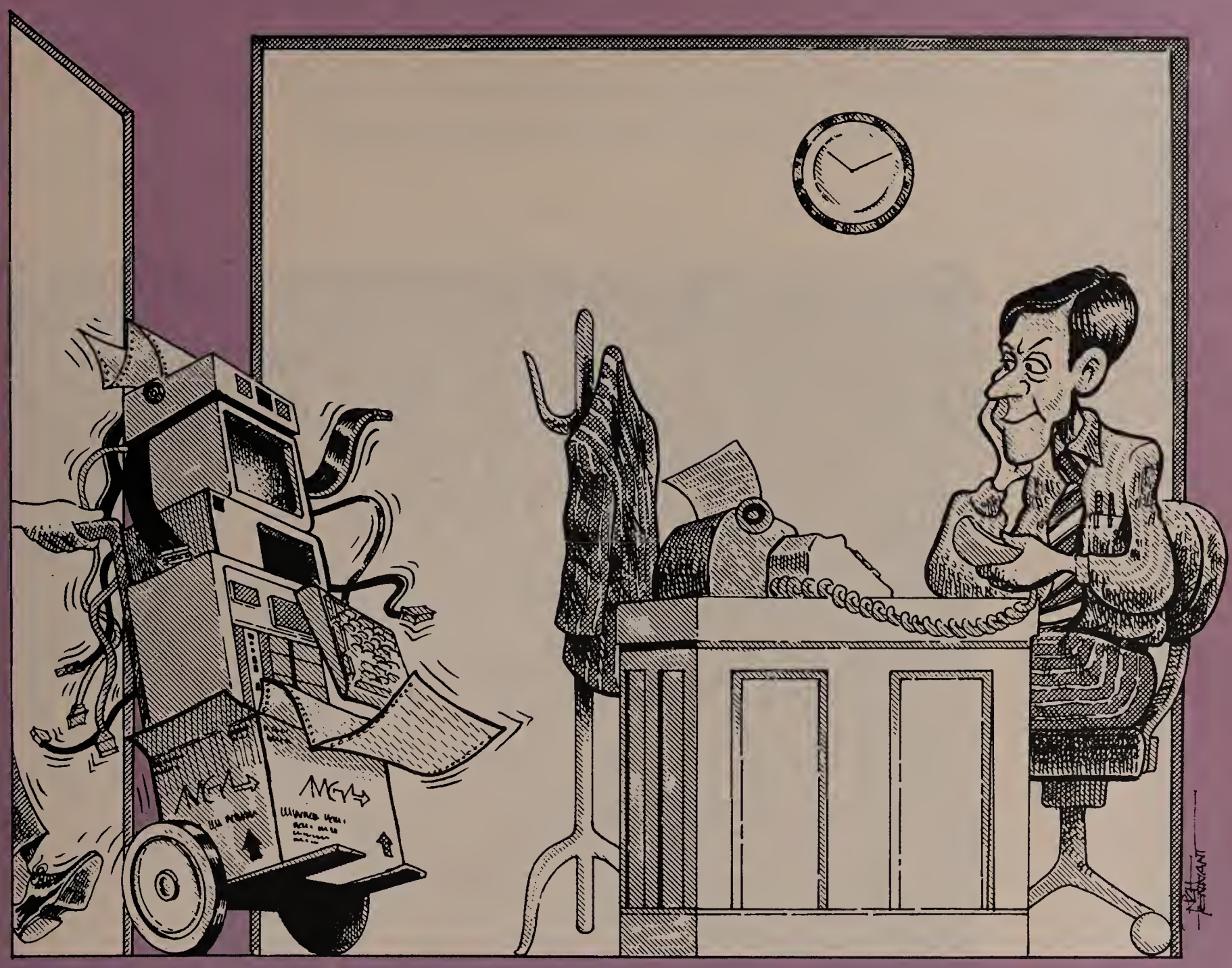
Moreover, the city's managers periodically import traditional independent contractors when they have a one-shot development or coding project where it is not essential to have the option to hire.

But, as the network managers in Los Angeles and in many private companies have discovered, a well-planned lease-for-hire program can simultaneously provide a fast, efficient way to satisfy immediate personnel problems while recruiting long-term employees. In a technical environment where skilled professionals are scarce, that can be an additional and valuable personnel weapon in the holster of any manager.

> *"If the client company likes the leased employee's work, it has the option to offer him a permanent job; otherwise, he remains an employee of CPS and is free to continue with the client if the client and leased employee agree, or move to a new assignment."*

> *"And he usually commands a higher salary at the end of the evaluation period."*

> *"Since he has proven skills, the leased employee is more valuable to the client."*



The E-mail effect

E-mail is changing the way people work.

BY JOHN J. CONNELL
Special to Network World

Electronic mail is one of the most productive applications of technology in the office. That may be surprising, because most of the publicity about machine applications goes to personal computers. But the benefits of micros tend to be ad hoc and apply only to a specific individual or area.

E-mail, an application of technology that pervades many aspects of business operations, is leading to dramatic changes in corporate culture.

Corporate culture comprises the attitudes and practices that have developed in carrying out an organization's mission. Because communications is the lifeblood of an organization, communications tools and their methods of use are at the heart of corporate culture.

E-mail is a communications tool that moves messages over a telecommunications network. Input and output of messages are via a terminal with a screen and keyboard. Increasingly, the terminal is a personal computer. The E-mail system is managed by a minicomputer, network server or mainframe, and in a growing number of cases, the system is used to download information from mainframes through minicomputers to personal computers and to send processed information back.

The most common rationale for E-mail is to eliminate telephone tag. Most people know the frustration of not getting through to a called party and the subsequent exchange of messages. Equally frustrating is the inability to deliver a coherent message through a third party. The allure of E-mail is that it

☞ Continued on **page 28**

Connell is executive director of Office Technology Research Group in Pasadena, Calif.

From **page 27**
allows the user to deliver messages directly and receive replies at a time and place of his or her choice.

In companies where internal correspondence is formally structured, telephone tag suspends action because the manager must contact a number of people before a decision is made. If one of those people is not available by telephone, the action is put on hold.

Furthermore, once contact is made, the manager must resurrect the train of thought that led to the question in the first place. The corporate communications pattern that develops is slow-moving and disjointed.

Companywide E-mail systems cross departmental lines and smooth out communication patterns. But to have a significant impact on an organization, they require a sufficient number of terminals and users to assure a consistently high level of traffic over the system. The most successful systems are those that are installed from the top down and have the full support of

"The most successful systems are those that are installed from the top down."

senior management.

Implementation of E-mail can be a shot of adrenaline to corporate culture. Users find they can enter messages and get responses within hours and they can check their mailboxes frequently, regardless of where they are within the corporate facilities. The impact is that responsiveness supplants inertia, and problem solving becomes quicker and more cohesive.

A second impact of E-mail systems on corporate culture comes from the changes that occur in communication patterns. E-mail systems challenge the adequacy of rigidly structured job definitions in a world of changing business requirements.

As an example, a company assigned all responsibility for handling customer problems to its marketing department. One day, a marketing manager, who was frustrated by his inability to solve a particular customer problem, used the E-mail's broadcast capability to ask for assistance from all those on the system. An engineer, whom the marketing manager had never met, responded over the system and suggested a solution. Thus, a new communication pattern was born.

"E-mail systems challenge the adequacy of rigidly structured job definitions in a world of changing business requirements."

After that, the marketing people began to solicit the ideas of the engineering staff to solve difficult customer problems. Eventually, the company changed the organizational relation-

ship between marketing and engineering so that responsibility for handling customer complaints was shared.

This is just one example of how E-mail changed communication patterns and subsequently led to a reassignment of responsibilities.

A third impact of E-mail on corporate culture is that it allows employees to see the flow of information within the corporation. Over the years, corporations have developed organizational hierarchies. Information is gathered at one level, passed on to the next level and continues along the line.

With E-mail, information is available at all levels simultaneously. Users begin to question if it is worth the delay to have the data pass through all these channels.

> *"A third impact of E-mail on corporate culture is that it allows employees to see the flow of information within the corporation."*

Such questions often eliminate some of these levels and promote more efficient methods of communication. Once again, changes in organization cannot be predicted. They come from users who find that the system can streamline operations.

The fourth impact of E-mail systems on corporate culture is that a company using such a system is perceived as being attuned to the times. Internally, E-mail systems are the entry point into the world of network-based systems — the heart of all modern information processing. Once exposed to such systems, new vistas open up for improving the way to do the job.

Externally, a company that offers its customers access to its E-mail system for handling direct communications presents an image of enhanced customer service and responsiveness. A current thrust in business is to use information technology as a competitive tool. Managers would be hard-pressed to find an application as powerful in responding to customers needs.

> *"A company using E-mail is perceived as being attuned to the times."*

Improving responsiveness, changing communications patterns, streamlining information flows and modernizing the internal and external corporate image — these are but four of the changes in corporate culture that can result by using E-mail.

The benefits of E-mail are ongoing. System users are continually coming up with new ideas and new approaches as to how system capabilities can be applied to help improve corporate performance.

The ultimate benefit of E-mail may well be an unleashing of creative thinking throughout the work force.

System 36 from **page 22**
processing speed by 50%.

Third, IBM is pushing two overlapping but distinct office automation scenarios. One is for MVS and MVS/XA hosts built around Disoss and the System/36. The other, for VM hosts, focuses on the Professional Office System environment and the 4300.

IBM will probably introduce another mid-range processor that will be a low-end version of the 4300 series. The low-end 4300 series machine will play the same role on the VM side of the house as the System/36 does for the Disoss, MVS and MVS/XA environments. While some overlap is likely, IBM can be expected to put some distance between these two mid-range machines. Certainly, it is inaccurate to speak of the new 4300 series low-end machine as replacing the System/36.

The success of the System/36 as a remote site processor also raises some interesting questions about the nature of the Fortune 500 mid-range market. How many "departmental" systems are being used for remote site applications as opposed to the conventional definition of an office automation system? The answer is most of them.

The average Fortune 500 company may have some highly concentrated large office facilities, but a sizable proportion of its employees are scattered in smaller offices, manufacturing plants and distribution centers. Take away the central locations, and most Fortune 500 companies look like conglomerates of small- and medium-sized businesses. Like smaller companies, they need attributes such as reliability, user friendliness and batch communications capabilities far more than they need to support personal computers, to interface to local-area networks or to support high-resolution business graphics.

This spatial dimension to the Fortune 500 market has been overlooked. Too many analysts prefer abstraction to reality, perhaps because the reality is a little too complicated and a little too dull. This industry needs to develop some more suspicion about the latest buzzwords and whizz-bang concepts from consultants and analysts. It needs to demand that they spend more time finding out what the user needs and less time telling users what they should be doing.

Antisnoop from **page 23**
same rights, protections and responsibilities as common carriers will have under the bill."

Indeed, among communications users and suppliers, the only sector that remains unhappy about the Electronic Communications Privacy Act is the satellite dish industry. The bill reduces the interception of private satellite transmissions, such as video teleconferencing sessions, from a felony to a misdemeanor. Such interception is now prohibited under two current laws, the 1968 Wiretap Act and the Communications Act. House judiciary aides say that the felony penalty was considered too stringent and not in keeping with the other penalty provisions in Rep. Kastenmeier's legislation.

Although the bill breezed through the House this year, it faces an uncertain future on the crowded Senate agenda. If it fails to pass the Senate this year, it will have to start all over, working its way through the House in the 100th session of Congress, which begins in 1987.

Unfortunately, the odds are your network will be free for the watching for a few years to come.

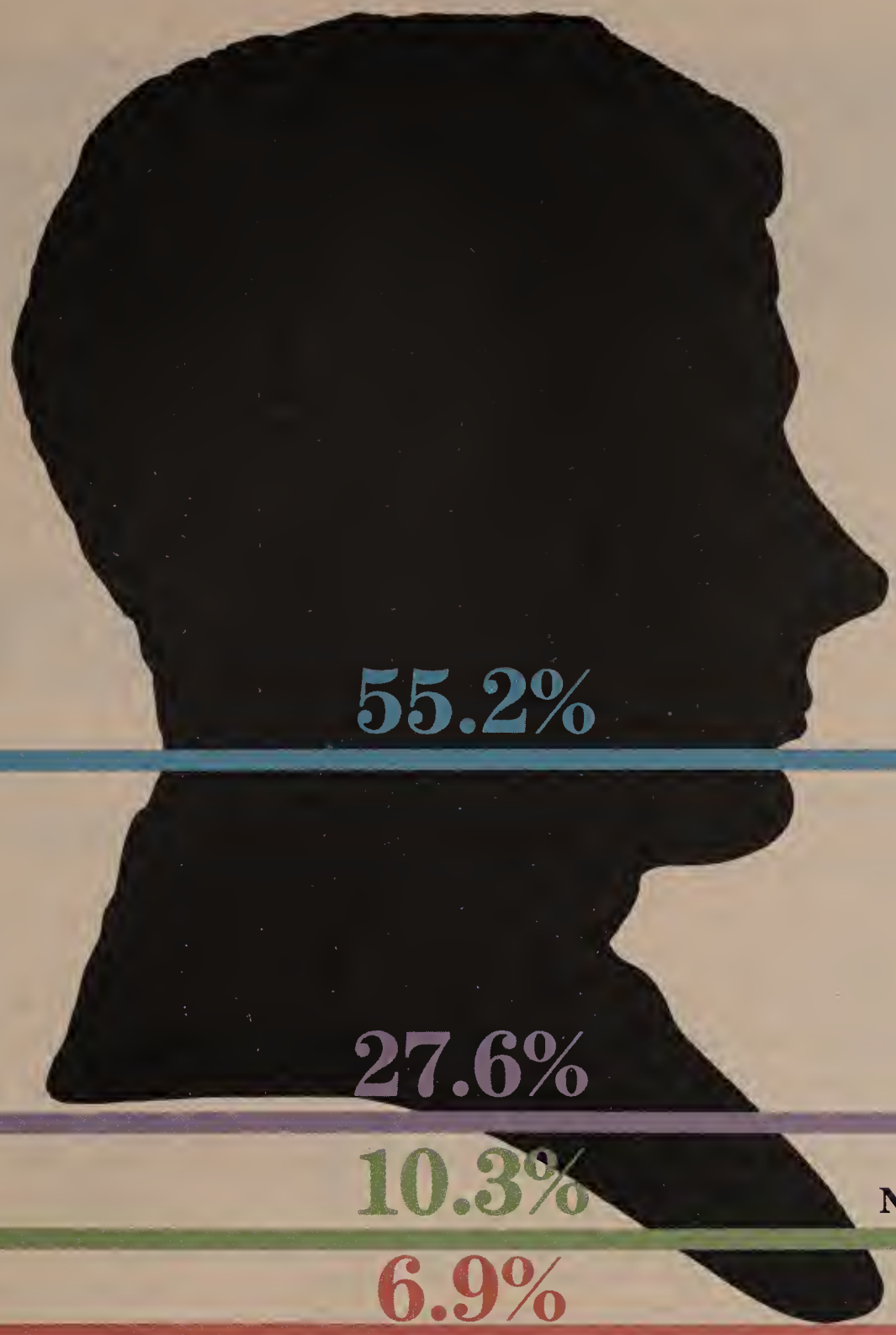
T-1 from **page 23**
that newer high-end T-1 node solutions are heavily software-based and require extensive real-time operational checkout and acceptance testing. Users should leave themselves twice as much time as they first think they will require for this phase of the project. In some cases, the vendor's original product beta test was performed only one year before the user received the product, so all the features may not have been completely exercised.

Most users are currently running an analog-based network or a hybrid of analog and digital facilities. An orderly migration to a T-1 network requires an in-depth cutover plan that minimizes the disruption to users. This is a crucial point, especially if the user is in a service business that is heavily dependent on the availability and quality of the telecommunications network.

This is just a glimpse of the challenges ahead for users that make the leap to T-1. High-speed digital transmission is not the same as analog circuit installation and management, and T-1 multiplexers are a great deal more complex than the traditional modem devices most managers have depended upon in the past.

The bottom line is that the manager must provide project leadership, and he must push the vendor. It is his responsibility and his network. He cannot let dependency on vendor promises impact the business. To this end, a well-thought-out, phased implementation plan is a necessity for managing the incorporation of T-1 technology into the network.

Profile of a fiber user



SOURCE: THE MARKET INFORMATION CENTER, INC., MARLBORO, MASS.

Continued from page 1

the necessary bandwidth to handle large volumes of both data and voice traffic, not to mention video.

Although it offers significantly larger amounts of bandwidth, coaxial is very expensive to install and may not serve all of the needs of, or be compatible with, the various peripheral devices.

Fiber-optic cable is an alternative that an increasing number of large users are turning to, according to a recent survey conducted by The Market Information Center, Inc., a market research firm in Marlboro, Mass.

Of the more than 400 sites surveyed across the U.S., 20.5% have incorporated fiber optics into their network topology. A more significant statistic is that nearly 30% plan to use fiber optics in the near future.

Profile of the current fiber user

The 20.5% of sites that now use fiber optics in their networks have an average of 1,000 employees and

Continued on **page 32**

Gilbert is executive vice-president of The Market Information Center, Inc. in Marlboro, Mass.

From **page 31**
are classified as Fortune 500 organizations. Nearly one-third of these organizations maintain more than 100 U.S. locations, not all of which are tied into their networks.

Approximately two-fifths of the fiber users have between two and five large, host-based data centers in the U.S., and IBM and Digital Equipment Corp. account for 77% of these host systems.

More than half of the respondents now using fiber also use both T-1 and 56K bit/sec lines. Another one-fourth of the respondents use T-1 exclusively.

Most of the respondents who use 56K bit/sec, T-1 or both are replacing analog backbones or are both replacing and supplementing their analog backbones. Another 27.6% are already replacing the lower speed digital services they've been using in their networks.

Current users of fiber optics appear to have a significant amount of flexibility. Some have established completely private networks linking each of their facilities through a variety of alternatives, depending on the amount and type of traffic. Others rely more extensively on T-1 or satellite facilities. Microwave, too, is becoming increasingly popular where distance and terrain are factors.

When users are able to provide their own direct links to other facilities, T-1 diminishes in importance, and microwave becomes more attractive.

Future fiber sites

One key difference between current fiber users and those planning to use fiber is the size of the organization. The average size for sites intending to use optical fiber is 500 employees, approximately half the size of current users. The number of locations maintained by organizations planning to use fiber is smaller too. Fewer than 20% of these organizations had more than 100 locations around the country.

The majority of the sites planning to use fiber had only one major data center in the U.S., and IBM and DEC users constituted 66% of this group — somewhat less than current users of fiber. The average usage of composite statistical multiplexer links amounted to only four such links and is expected to double within two years. Time-division multiplexer links are also expected to double in number within the same period.

According to the survey, Binary Synchronous Communications traffic is expected to remain constant at approximately 10% of total traffic, and Synchronous Data Link Control traffic is expected to show a major increase — from 17.5% to 55% — in the next two years among future fiber users. This may show that smaller users are following right on the heels of the larger ones in the implementation of these technologies.

There is an indication that many of these users are in the midst of planning some major changes within their networks. More than half of the users planning to use fiber are looking to implement both T-1 and 56K bit/sec lines in their networks. Of that number, most will be both supplementing and replacing analog backbones on their networks with these services. Another one-third say that they would be primarily replacing existing analog backbones, not supplementing them.

Fiber doesn't work for everyone, however. Although the survey concentrates on the 50% that use or plan to use fiber, there is another 50% that solve network problems with other options. Fiber appears to satisfy those large users that maintain a large, diverse number of locations and have the resources necessary to build their own internal networks with little required from the outside.

If this trend continues, however, fiber optics will play a critical role in many future networks that are currently under design.

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1 My primary areas of activity. Circle ONE only.
I am involved in evaluating communications (data, voice and /or image) products and services:
1. for *use within my own* company/organization
2. for *resale* to other companies/organizations
3. Both

1a For communications, my primary responsibility is: Circle ONE only.
1. Data Communications
2. Voice Communications
3. Both

2 Circle only the ONE title classification which most applies to you.

Company Management
11. Chairman, Pres., Owner, Gen. Mgr., Partner, Director, CIO, VP, Dir. Head of Finance, Admin. Procurement

Communications Management
Data Communications
21. Management
VP, Dir., Mgr., Head, Chief: Data Communications, including Networks, Engineering, Design, R&D, Application Development
22. Supervisory/Staff
Supervisor, Head : Networking, Design, Analysis, Engineering, R&D, Applications, Services
Telecommunications
31. Management
VP, Dir., Mgr., Head, Chief: Telecomm., Voice Comm., including Networks. Engineering, Design, R&D, Application Development
32. Supervisory/Staff
Supervisor, Head: Networks, Design, Analysis, Engineering, R&D, Applications Services
Factory Communications
41. Management
42. Supervisory/Staff

MIS/Data Processing
51. Management
VP, Dir., Mgr., Head, Chief: MIS/DP, Systems Application Development, Operations, Office Automation
52. Supervisory/Staff: Supervisor, Head of System Design, Analysis, Applications

Others
75. Consultant
80. Educator
85. Financial Analyst
90. Marketing/Sales
95. Other _____

3 Job Function
Which one of the following best describes your functional involvement with communications (data, voice, and/or video) products? Circle ONE only.

Corporate
1. Business Management, Planning and/or Development

Communications System/Network
2. Management, Planning and/or Development
3. Implementation and/or Operation
4. Other _____

4 Which one of the following best describes the primary business activity of your organization at this location? Circle ONE only.

Consultants
11. DP/Communications Consulting Services
12. Consulting Services (except DP/Communications)

End Users
13. Manufacturer (other than computer/communications)
22. Finance/Banking/Insurance/Real Estate
23. Education
24. Medicine/Law
25. Wholesale/Retail Trade
26. Public Utility/Transportation
27. Mining/Construction/Petroleum Refining/ Agriculture/Forestry
28. Business Services (excluding DP/Communications)
29. Government: Federal
30. Government: State/Local

Vendors
41. Carrier: including AT&T, BOCs, Independent Telcos, Public Data Networks, Intern'l Records Carriers
42. Interconnect
43. Manufacturer Computer/Communications Equipment
44. Value Added Reseller (VAR), Systems House, Systems Integrator
45. Distributor
46. DP/Communications Services (excluding consulting)
95. Other _____

5 In which ways do you typically become involved in acquiring communications products (data, voice, and/or video) and services? Circle ALL that apply.
1. Recommend/Specify
2. Identify/Evaluate Potential Vendors
3. Approve the Acquisition
4. None of the Above

6 Check ALL that apply in columns A and B.
A. I am personally involved in the acquisition process (specification, selection, approval) for the following products and services:
B. These products and services are presently in use at this location:

A	B	*Product/Services*
		Computers
☐	☐	01. Micros
☐	☐	02. Minis
☐	☐	03. Mainframes
		Data Communications
☐	☐	04. Communications Processors
☐	☐	05. Comm./Networks Software
☐	☐	06. Digital Switching Equipment
☐	☐	07. Facsimile
☐	☐	08. Modems
☐	☐	09. Multiplexers
☐	☐	10. Protocol Converters
☐	☐	11. Network Mgmt. & Control
☐	☐	12. Test Equipment
☐	☐	13. 3270 Controllers
		Telecommunications
☐	☐	14. PBXs
☐	☐	15. Key Systems
☐	☐	16. Central Office Equipment
☐	☐	17. Integrated Voice/Data Terminals

A	B	*Product/Services*
		Transmission/Network Services Equipment
☐	☐	18. Microwave
☐	☐	19. Satellite Earth Stations
☐	☐	20. Local Area Networks
☐	☐	21. Wide Area Networks
☐	☐	22. Packet Switching Equipment
☐	☐	23. Fiber Optic Equipment
		Communications Services
☐	☐	24. Packet Switching Services
☐	☐	25. Cellular Mobile Radio Services
☐	☐	26. Electronic Mail
☐	☐	27. Enhanced Services
☐	☐	28. Centrex

7 Estimated value of communications systems, equipment and services:
A. which you helped specify, recommend or approve in *last* 12 months? Check only ONE in column A.
B. which you plan to specify, recommend or approve in *next* 12 months? Check only ONE in column B.

A	B		A	B	
☐	☐	1. Over 10 million	☐	☐	6. $100,000-250,000
☐	☐	2. $5-10 million	☐	☐	7. $50,000-100,000
☐	☐	3. $1-5 million	☐	☐	8. Under 50,000
☐	☐	4. $500,000-1 million	☐	☐	9. Don't know
☐	☐	5. $250,000-500,000			

8 Estimated gross annual revenues for your entire company/institution:
Circle only ONE.
1. Over $1 billion
2. $100 million to $1 billion
3. $5 million to $100 million
4. Under $5 million

9 Estimated number of total employees at this location:
Circle only ONE.
1. Over 5,000
2. 1,000-4,999
3. 500-999
4. 250-499
5. 100-249
6. 50-99
7. 20-49
8. 1-19

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3. Sign and date form

THANK YOU.

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MCI from **page 1**
cilities, which the long-haul carrier will use to link larger customers directly to its network.

Although many customers use bypass facilities to access MCI today, those facilities have traditionally been arranged by the customer. Prime Computer, Inc., for example, uses a private microwave system to link its Natick, Mass., offices to MCI's network point of presence in downtown Boston.

Contracting directly for bypass facilities would mark a strategic shift for MCI, but would mirror a trend started by AT&T. Last March, AT&T signed a long-term agreement to lease capacity from Teleport Communication, a New York City-based fiber carrier 95% owned by Merrill Lynch & Co. and 5% owned by Western Union Corp.

MCI, like AT&T, will benefit from bypass by shedding the heavy burden of access charges imposed by local telephone companies. It will also stabilize its costs by acquiring the facilities on long-term contract, an option most telephone companies do not offer.

Although no customer links have been installed, the bypass carrier has already fulfilled a $1 million contract to link MCI offices in the greater Washington, D.C. area, according to an MCI spokesman.

He said the bypass company is also installing a fiber connection to link facilities here with a new MCI point of presence being constructed in Rockville, Md. That leg of the network will also support a major MCI computer center in Rockville.

The MCI deal brings to light the emerging market for companies offering bypass networks within a single city. The divestiture of AT&T has made it possible for small companies to try to make a living by providing dedicated voice links to long-haul carriers.

"These little carriers are beginning to spring up all over," noted one analyst who asked to remain anonymous after providing information about the MCI bypass contract. One company, Wang Communications Corp., a subsidiary of Wang Laboratories, Inc., has established bypass networks in a number of major metropolitan areas. The primary aim of the company is to offer links to connect customers with long-haul carrier points of presence, regardless of whether the business is initiated by the end user or by carriers.

"Eventually, the key to this market," the analyst said, "will be having enough money, clout and credibility to provide these types of service on a national basis." A bypass carrier with facilities in major markets could approach customers as a national bypass company.

Gulfnet from **page 6**
tem provides system security by mirroring each ongoing transaction.

"If any one device or data pack fails, an alternate device or data pack can take over without interrupting the transaction," Jacobs said.

Gulfnet's Tandem system currently uses four processors. The Nonstop TXP system, however, is expandable to 16 processors in a system. Up to 16 systems yielding as many as 256 processors can be networked together, according to Jacobs.

The Tandem system also provides transaction reports to a clearinghouse where each member bank maintains an account to cover funds transfers. The data collected by the Tandem system is off-loaded to an IBM 3081 mainframe.

Of the 59 Gulfnet member banks, half currently have ATMs on line. About 500,000 Gulfnet ATM card holders can access the system for withdrawals from checking or savings accounts, or for obtaining an account balance. Another 500,000 credit card holders can access Gulfnet ATMs for credit card cash advances.

▶ INDUSTRY INSIGHTS

PBX makers suffer 2nd-quarter malaise

BY MICHAEL FAHEY
Staff Writer

Lower second-quarter revenues resulted in reduced quarterly earnings for Northern Telecom Ltd. and increased quarterly losses for rival private branch exchange maker InteCom, Inc., according to information released by the companies last week.

Northern Telecom said second-quarter earnings fell to $58 million, or 50 cents per common share, on revenue of slightly more than $1 billion. Earnings were down 24% from $76.4 million in the similar period last year. All figures are in U.S. dollars, reflecting the Toronto-based firm's adoption of the U.S. dollar as its reporting currency.

> *"InteCom incurred a loss of nearly $20 million."*

Edmund Fitzgerald, Northern Telecom chairman and chief executive officer, said, "Declining sales and profit margins in our DMS central office switch business negatively affected first- and second-quarter earnings."

Fitzgerald said financial performance was in line with expectations. He predicted stronger performance in the second half of 1986, particularly in the fourth quarter.

InteCom incurred a loss of nearly $20 million, or 61 cents per share, compared with a loss of nearly $7 million, or 21 cents per share, in the similar quarter of 1985. Revenue for the period was more than $24 million. The losses include a more than $12 million outlay for settlement of litigation with American Networks, Inc., as well as expenses related to the pending merger with Wang Laboratories, Inc.

InteCom Chairman and Chief Executive Officer C. Michael Bowen said the settlement and InteCom's pending merger with Wang should strengthen perceptions of the company and help increase both sales and revenues.

V.32 from **page 8**

these pieces to a pie, we needed that extra speed," Pierce said.

Ford found another use for the V.32 modems during the recent Communications Workers of America strike against AT&T. When the installation of leased lines between several host branches and local branches was delayed, Ford installed V.32 modems. Pierce said users at the local branch, who deal interactively with the minicomputer at the host branch, did not notice any delay.

The V.32 modems "do what they're supposed to do" and have proven to be very reliable to date, Pierce said. However, he said he did encounter noise problems with the local loop at several branch sites, which made it impossible to run at 9.6K bit/sec. "It took two or three phone calls," Pierce said, "but in every case, I was able to get the local phone company to fix the loop so we could run at 9.6K bit/sec."

Los Alamos staff engineer Curt Cuper has tested V.32 modems on Federal Telecommunications System lines and found the error rate to be one error in one million bits transmitted. He had previously tested half-duplex, 9.6K bit/sec modems on the same lines and found the noise level too high for the modems to operate properly.

"We're still in the evaluation stage. We figure the best application for [the V.32 modems] is secure dial-up," Cuper said. Using an encryption system and V.32 modems, the laboratory hopes to have two secure dial-up lines in place by year's end. However, Cuper said he has encountered problems with the encryption process, including lost data bits, which may slow implementation of the service. It is unlikely, he said, that those problems are due to the modems.

Although vendors are optimistic about the growth of the V.32 market, industry analysts are split in their opinions about how much demand there will be for high-speed, dial-up synchronous communications. "The market for the product is really application-specific," said Lynne Davis, senior research analyst with International Data Corp. in Framingham, Mass. "I don't think [the V.32] is going to be for the [personal computer] market. It's too high a price and personal computer users don't need high-speed transmission in both directions."

> *"I don't think the V.32 is going to be for the personal computer market. It's too high a price and personal computer users don't need high-speed transmission in both directions, said Lynne Davis of International Data Corp. in Framingham."*

One key application she sees for V.32 modems is for dial-up in the tail-end circuit of a leased line. However, Davis noted, "that is a limited market with respect to the entire market."

Although applications may be slow to emerge, they will develop, said Greg Cipriano, senior partner of Telecom Resources at Strategic Market Trends, Inc. in Stoughton, Mass.

"I hear people, including modem manufacturers, say the V.32 modem market isn't going anywhere," Cipriano said. "That's a mistake. This is an instance of technology leading applications. It's going to be a big market, maybe one of the last big markets in the switched area. Applications will evolve as modem prices come down."

Cipriano said he believes Rockwell International Corp. is investing heavily in the development of a V.32 chip set. Such a chip set could help cut the cost of these modems. However, Cipriano said, "these chips are going to be very difficult to produce. They're not going to be out for a year." One reason for the long development time is the complexity of the V.32 technology. "There isn't much field experience out there for echo cancellation for data," Cipriano noted.

Both Concord Data and Codex are using digital signal processing chips in their V.32 modems and implementing features such as echo cancellation and trellis-coded modulation in software. "I don't think there will be chip sets for the technology for many moons," said Concord Data's Miller. "It's pretty sophisticated technology."

A fixed chip set can also limit a vendor's flexibility in product design, he said. "If you have a chip set, you're locked into it."

Chip from **page 1**

changes, digital telephones, terminals, personal computers and other types of workstations outfitted with such chips will be compatible.

AT&T's chip, however, is proprietary, like those from other vendors trying to establish a beachhead in the nascent ISDN chip industry.

"The CCITT standards for ISDN interfaces are not set yet," noted Ian Angus, president of the Toronto-based consultancy, Angus Telemanagement Group, Inc. "The CCITT has said you have to accomplish X, but it hasn't said how," he said.

Northern Telecom, Inc., AT&T's archrival in the market for both PBXs and telephone company central office switches, last May announced a joint development effort with Motorola, Inc. aimed at producing similar chips. Mitel is also said to be developing its own chip.

"Everyone is trying to bring out a chip, so that when the process of actually defining the specific technical implementation is done in 1988, they will be in the running for leadership," Angus said.

Although the chips meet CCITT specifications, the chip architectures are different enough to render devices implementing the chips incompatible, he said.

That theory is supported by Lynn Ditty, AT&T product manager for communications devices. "CCITT documents like this don't always cover all of the potential problems," he said. "There may be problems between this chip and others."

In the race to gain market and industry support for its chips, AT&T enjoys the advantage over other communications vendors of having the largest in-house semiconductor production facilities.

That bid for supremacy in the coming chip wars may also be aided by basic chip design benefits. Ditty claims Unite has been partitioned better, that is, has a cleaner and more useful circuit layout than the Northern Telecom and Motorola chip.

Other chip benefits include a programmable option that, under microprocessor control, enables the chip to be configured to support a variety of industry standard voice encoders and decoders used in the conversion between analog and digital voice signals.

Unite has the ability, according to Ditty, to connect the coder/decoder to one port on the chip and then use an attendant microprocessor to switch the coder/decoder to either of the 64K bit/sec B channels. This makes data support with the chip more flexible.

The chip also has an on-board High Level Data Link Control protocol controller that Ditty said provides formatting support for the D signaling channel within 2B+D.

Samples of the Unite chip are currently available, with full production scheduled to begin by year end. AT&T does not currently have plans to license the chip, but will supply it to interested parties. No second-source chip agreements have been reached.

Letters

The token-ring advantage

In "Bridge unveils token-ring net server," (*Network World*, June 23), you reported on the new Bridge Communications, Inc. offering of a token-ring local-area network product. In the article, David Terrie of *Network Monitor* was quoted stating that the impact of token-ring technology on the market has been overestimated. He later says that "there's no technical or performance advantage."

Mr. Terrie should be aware of the difference between the two access techniques, in that [carrier-sense multiple access with collision detection] (Ethernet) is probabilistic while token ring is deterministic. What this means to the user is that a lightly loaded network with many terminals will work slightly better (faster) with Ethernet. However, as the data traffic increases, the token-passing network will degrade gradually, while the Ethernet network can come to a screeching halt. Both networks have applications in the industry, and it is patently incorrect to believe that the token-passing invention was for naught.

Joseph Garodnick
vice-president
Fibronics International, Inc.
Hyannis, Mass.

The pro and con of industry conferences

I believe both writers for your "Pro & Con" article, "Are industry conferences a waste of time for smart users?" (*Network World*, July 7) were poorly chosen.

Mr. Mott seems to be extremely negative in his assessment of communications industry conferences. I believe learning experiences like these conferences require that they be approached with an open mind and positive expectations.

Mr. Harrar, on the other hand, seems to have been chosen from inside the trade show industry. He makes some good points, but I believe someone from the user environment would have been a better choice.

Candor compels me to say that both writers have made some useful points. I can relate to the kind of conferences to which Mr. Mott refers. Unfortunately, I've attended some of the same kind. There are, however, some very good technical conferences, and the opportunity to learn from the experiences of our peers is extremely valuable.

Our annual conference is a prime example. We will have over 50 hours of technical papers presented over a three-day period. These papers will be application-oriented and directed toward our specific industry. In addition, we have several in-depth seminars, which have been well attended and have received favorable feedback.

I also disagree with Mr. Mott's assessment of the vendor exhibits. We have found many good solutions to problems by attending these exhibits. In many cases we have found easier, more productive ways of doing our work through visits to the booths.

As more emphasis is placed on productivity, the need to stay abreast of technology becomes even more important. The benefit gained from two or three days spent at a good conference can far outweigh the cost.

Certainly, as Mr. Mott suggests, there are too many humdrum conferences; however, there are also a lot of good ones.

N. E. Fowlkes
Energy Telecommunications and Electrical Association
Dallas

DMI deserves more credit

Those of us participating in the ISDN standards effort are aware of the primordial stage of development these standards are in. When Hewlett-Packard Co. and AT&T set their objectives for a first Digital Multiplexed Interface (DMI) link, it was not possible to create a multivendor compatible link with benefits in both the wide-area and local-area networking arenas.

I was surprised by your recent article "DMI and ISDN don't mix" (*Network World*, June 23). Your readers may appreciate a more complete description of the new HP-to-AT&T linkage, which takes into account DMI's benefits in its intended application, in addition to your comments on the product's use in wide-area networking.

Our customers are telling us that DMI provides a much needed reduction in the cost and complexity of using a private branch exchange to provide RS-232-C networking in a local environment. Your disappointment in the product because of its questionable economy as a wide-area link could have been tempered for your readers by a better description of the benefits DMI provides in its intended local environment.

Evolving to encompass the growth in the ISDN standards for primary rate interfacing, the DMI specification now provides for capabilities beyond what was possible when HP and AT&T set their objectives for this initial DMI offering. Like you, we also look forward to further developing DMI, so that it will provide great benefits as a wide-area networking link.

Tim Shafer
ISDN product manager
Hewlett-Packard Co.
Roseville, Calif.

Users quiet from **page 2**

the filing, they must hire a law firm to represent them before state authorities.

Fights against local tariff changes has been carried out in a few ad hoc situations (see "Hikes halted," page 2). In Pennsylvania, Rhode Island and Massachusetts, users have rallied to fight tariff changes. But only a handful of groups have been organized on a full-time basis.

Reasons for the lack of regional organizations are many. One is inept management. "There is a myth that large companies are well managed," Blegen noted. "Some are poorly managed and do not pay attention to millions of dollars of risk standing right at their door." Consequentially, they are unwilling to support lobbying efforts.

Another problem is that senior management is unaware of the need for regional representation. "Companies that normally spend millions of dollars lobbying on other issues will not become involved in the rate-setting process," Schoff said. "They do not seem to understand how the process works."

Many users also prefer to let their counterparts organize and fight the battle against rate hikes. "Rate cases are decided across-the-board, so companies may reap substantial benefits without any investment," Selwyn said.

In addition, companies fear adverse publicity. Rate hikes typically pit residents against business. For example, the Pacific Bell case is designed to keep residential rates at the present level and increase business rates.

Another deterrent to regional organization is ties between businesses and local telephone companies. A company president may have a seat on a telephone company board of directors. The president may not want to lead a fight against the telephone company. In cases where there is no direct business relationship, there may be a personal relationship. Telecommunications managers may be leery of starting a rate brawl with a friend.

But despite the obstacles and investments inherent in fighting rate increases, Schoff, whose organization has been involved in three cases, claimed the effort is justified. "We didn't receive every concession we asked for, but we did influence the outcome of the hike [proposal]," he added.

The TCA member agreed that the benefits of battling rate hikes far outweigh the risks and costs. "Users have to look upon lobbying against rate hikes as just another way of keeping telecommunications costs in line," the member said. "It has to become an integral part of a telecommunications manager's job."

Florida from **page 3**

The IRC report is the first of three emerging studies that assess the future needs of Florida's communications facilities. Two joint House and Senate committees, the Division of Communications and the Joint Committee on Information Technology Resources, are preparing these studies.

According to Ed Levine, staff director for the Joint Committee on Information Technology Resources, the Division of Communications has statutory responsibility for voice functions and by law must draft a strategic plan. However, he would not specify a deadline. The IRC is responsible for all other aspects of data communications and data processing, including 12 autonomous data centers located throughout the state.

"Our study is directed toward management goals," Levine said. "We will ask legislative members in which division responsibility for planning, operations and administration should be located."

Few concerned with vendor slant

Although the Florida Committee on Telecommunications is made up of vendor representatives, including executives from such companies as Racal-Milgo, Harris Corp., GTE Data Services and AT&T Information Systems, few people were concerned that the report's findings would be slanted toward one vendor or another.

"Yes, they were vendors and they have some interest in the outcome of the study," Levine said. "But it was still a fair attempt on their part to put their product offerings in abeyance and provide some expertise. I think their portrayal of the state of networking technology was on target."

Agreeing with Levine was Mark Scharein, director of the Law Enforcement Data Center, one of the state's 12 data centers.

"The vendor committee was working closely with the IRC," he said. "I would attach less weight to the study if it came out as an independent report."

But some state officials who are also users questioned the integrity of a vendor-sponsored report. Several state agency communications managers, who were contacted for comment, said they approved of the IRC/vendor study.

However, they also said the results of the study paint a costlier picture because the vendors stand to make money revamping the network.

"The fact that the committee was made up of vendors did not lend credence to the study," said one manager who asked not to be identified.

"When I reached the portion of the study that listed the cost projections, I just ignored those figures.

"All voice, data and video networks are currently duplicated," he said.

"We would certainly save money down the road if we started preparing for ISDN now. But we also do not have to buy from those vendors."

Calendar

July 28-29, Boston — Networking the IBM PC or Compatibles. Also, August 4-5, Kansas City, Mo.; August 11-12, Minneapolis. Contact: The American Institute, Carnegie Building, 55 Main St., Madison, N.J. 07940.

July 28-29, New York — Data Communications and Networking for the IBM PC XT/AT and Other Compatibles. Also, August 11-12, Boston; August 18-19, Chicago; August 27-28, Washington, D.C. Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810.

July 28-29, Dallas — Introduction to Telecommunications Systems: Technologies and Applications. Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

July 28-30, San Francisco — Computer Networks. Contact: Technology Transfer Institute, 741 Tenth St., Santa Monica, Calif. 90402.

July 28-August 1, Washington, D.C. — Internet Systems and Protocols. Contact: The George Washington University School of Engineering and Applied Science, Washington, D.C. 20052.

July 29-30, San Francisco — Financial Analysis for Telecommunications Equipment Acquisition. Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

July 30-August 1, Arlington, Va. — Internetworking and Advanced Protocols. Contact: Center for Advanced Professional Education, Suite 210, 1820 E. Garry St., Santa Ana, Calif. 92705.

July 30-August 1, Los Angeles — Data Communications: Fundamentals and Beyond. Also, August 6-8, Anchorage, Alaska; August 13-15, Boston; August 20-22, Indianapolis. Contact: The American Institute, Carnegie Building, 55 Main St., Madison, N.J. 07940.

July 31-August 1, Washington, D.C. — The IBM PC XT/AT: Maximizing its Potential. Also, August 25-26, Boston. Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810.

August 4-6, New York — Telecommmunications Management. Contact: Business Communications Review, 950 York Road, Hinsdale Road, Ill. 60521.

August 4-6 and 7-8, Santa Cruz, Calif. — Images: Technologies, Applications, Processing, and Systems. Contact: The Institute in Computer Science, University of California Extension, Santa Cruz, Calif. 90564.

August 5-6, Chicago — IBM's DBMS & 4GL. Contact: Digital Consulting Associates, Inc., 6 Windsor St., Andover, Mass. 01810.

August 5-8, New York — Data Communications: Components, Systems, and Networks. Also, August 19-22, Anaheim, Calif. Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

August 6-7, Chicago — Fiber Optics in Plain English. Contact: Clifford, Inc., 83 Main St., Bethel, Vt. 05032.

August 6-8, New York — Fiber Optic Communications. Contact: Business Communications Review, 950 York Road, Hinsdale Road, Ill. 60521.

August 6-8, Scottsdale, Ariz. — Data Communications. Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

August 9-10, Los Angeles — Softeach: The Computer Products Training Forum. Also, August 23-24, Atlanta. Contact: SOFTSEL Computer Products, Inc., 546 North Oak St., P.O. Box 6080, Inglewood, Calif. 90312-6080.

August 11-12, New York — Fundamentals of Data Processing for Administrative Assistants and Secretaries. Contact: New York University School of Continuing Education, Seminar Center, 575 Madison Ave., New York, N.Y. 10022.

August 11-13, Washington, D.C. — Controlling Corporate Network Costs. Contact: Telestrategies, 1355 Beverly Road, McLean, Va. 22101.

August 11-15, Philadelphia — CICS/VS Advanced Programming/Design. Contact: Computer Assistance, Inc., Suite 480, 1150 1st Ave., Valley Forge Plaza, King of Prussia, Pa. 19406.

August 13-15, Boston — SNA Architecture and Implementation Seminar. Contact: Communications Solutions, Inc., 992 S. Saratoga-Sunnyvale Road, San Jose, Calif. 95129.

August 14, Minneapolis — The IBM PC Data Communications Survival Course. Also, August 19, Chicago; August 20, Rochester, N.Y. Contact: Data-Tech Institute, Lakeview Plaza, P.O. Box 2429, Clifton, N.J. 07015.

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ISDN from **page 5**
customer premises equipment, it is unclear whether AT&T's equipment manufacturing arm, AT&T Information Systems, will itself manufacture ISDN equipment in the near future. However, George Ryva, network services planning supervisor for AT&T Information Systems, claimed the company will announce products that comply with the Primary Rate Interface before year end.

"Together," AT&T claimed, "the references are a planning guide for designers, manufacturers and suppliers of ISDN-compatible systems and equipment, as well as potential ISDN customers and their consultants."

CCITT-recommended information

AT&T said the information in both publications is based on 1984 recommendations by CCITT and subsequent activities by this standards group as well as domestic standards organizations.

Copies of the two reference documents may be obtained by placing a prepaid order with the AT&T Customer Information Center, P.O. Box 19901, Indianapolis, Ind., 46219, or by calling the center's toll-free number. The number is (800) 432-6600, operator 101.

SNA from **page 4**
will be used for personal computer networking, Hodge said. HCA is also hoping to implement gateways between the Token-Ring Network to communicate with users outside of the HCA network environment.

One of the more ambitious aspects of the Token-Ring implementation will be a system for transmitting X-rays from various medical facilities in five to 10 seconds. "This capability is still in the developmental stage, and it would be misleading to say we are doing this now," Hodge said. "We are pioneering this technology with the help of IBM and a number of other major vendors, such as Hewlett-Packard [Co.], Motorola, [Inc.] and General Electric [Co.]" IBM recently announced software that will compress and digitize images and move them around in file form.

"Our requirements are much more demanding than the typical office or factory environment," Hodge said. "In order to transmit X-rays, we need at minimum 70M bytes of solid throughput, and that's under average conditions.

"We can't afford to degrade the image either, since a gray area in an X-ray could be interpreted as a tumor," he continued. "We're hoping this technology will help reduce the time it takes to diagnose an illness. The network should enable physicians to share information on a case."

3Com from **page 5**
network user would not need that product."

Even 3Com admits its board may not be attractive to users. "IBM has priced its Personal Computer board very aggressively," McNiel said. "We realize that if someone's first priority is cost, they will probably choose the IBM adapter board. They can still choose to use our servers, our cabling and our software. And they can use our boards for their servers, or for their software developers who are doing a lot of disk-intensive I/O applications. But for the small network used to send mail messages back and forth, users would probably choose the IBM board."

One reason 3Com's board is so expensive, McNiel said, is that the token-ring chip set from Texas Instruments, Inc. is costly. "It's a difficult market to bring out a Personal Computer adapter product for," she said. "There needs to be more chip vendors besides Texas Instruments providing chips."

For the near future, McNiel expects token-ring products to represent a small portion of 3Com's revenues. "A year from now, when people can actually get hold of an IBM Token-Ring Network, the token-ring market will take off," McNiel said.

3Com also plans to participate in the market for AT&T's Starlan products, McNiel said. The company's 3+ software already runs on Starlan. "We could provide Starlan products almost instantly if we needed to, but it's not something people are screaming at us for," McNiel said.

Hikes halted from **page 3**
stead, according to Blaszak, the two BOCs have submitted conflicting information to the FCC regarding user demand for special access service.

The Washington D.C.-based attorney said a June 24 document filed with the FCC by New York Telephone asserted that the revenue the company needed to recover from special access has remained constant, while demand for special access service has decreased. In a July 24 filing with the FCC, New York Telephone argued that the demand for special access service had increased substantially, thereby justifying an increase in the special access rate, Blaszak said.

"New England Telephone made assertions about declining demand," Blaszak said. "But it also argues that its special access operating costs have gone up substantially. If demand is declining, why would operating costs go up?"

Blaszak said his group has asked the FCC to suspend implementation of the special rate hike until the two companies submit clearer documentation of the need for a special access hike.

According to Blaszak, the Ad Hoc Committee believes the FCC agreed to the proposed rate hike without requiring the carriers to provide "consistent, auditable supportive information." He said he is concerned that such a practice would encourage other BOCs to raise their rates without providing adequate, cost-based justification.

"We would like the commission to make sure that the record contains the actual facts behind the general conclusions on the need for increases," said Ad Hoc Committee member Richard Fazzone, director of communications policy for GE.

Blaszak said the FCC has in the past agreed with the carriers' contention that current special access rates on private-line service encourage users to bypass the switched network in favor of private lines. However, he maintained that this contention has not been clearly supported.

Both New York Telephone and New England Telephone argue that an increase in special access charges is necessary to bring their companies' rates of return closer to the FCC's allowable limit.

Vendor response from **page 4**
Corp. have experienced financial problems and, some users believe, have become more responsive to user concerns.

Share, Guide and Common have developed elaborate procedures to ensure their concerns are heard by IBM. Committees within the groups are responsible for specific IBM products.

Users frustrated by a product's shortcoming bring their requests for changes to the group. At regular Share, Guide and Common meetings, often attended by thousands of members, users debate the merits of various proposed changes. If a majority of the users vote for a change, then the group will formally present it to IBM.

IBM has assigned employees to deal directly with the users group committees. These employees typically attend the meetings where the recommendations are formulated. "By attending the meeting, IBM gets a better understanding of exactly what the users' concerns are," Fred Jenkins, president of Share, stated.

There have been instances when IBM thought that it had given the users what they wanted only to discover that an enhancement did not fully meet the requirements. But, noted John E. Mack, president of Guide, "IBM and the user groups are both getting better at ensuring that the recommendation process flows smoothly."

After attending a Share, Guide or Common meeting, the IBM employee takes requests back to the appropriate product development team. The team examines the recommendation, a process that could take a few weeks or many months. Given the breadth of IBM's product line, the users groups make thousands of recommendations each year. The users groups thus have to track carefully the status of each recommendation. For example, Guide uses a personal computer and a data base to monitor the progress of its recommendations.

IBM can respond to a request in four ways. Some recommendations will be incorporated in a planned IBM product release. The company may also agree to attempt to incorporate the request in a future release, without promising that it will be included. The development team may ask for more time to examine the request, or the recommendation may be rejected outright.

IBM noted its work with Share and Guide at the June product announcements for two reasons. First, the percentage of satisfied requests was greater than normal, making it appear that the company is very responsive to users' concerns.

Second, Share and Guide have been pressuring Big Blue to give them credit for the work they do. "People who work with our group have to take time off from work to attend meetings and work with the various committees," Share's Jenkins noted. "Some companies may question how valuable that time is. We have to make them aware of the success of these groups."

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manager if the manager is selecting a product on factors other than price. Without credibility, she said, "you can become a victim of cost."

Companies with long-range corporate and departmental communications strategies are likely to rank purchasing influences differently than companies without such long-range plans, according to Parker.

Whether equipment is adaptable for the future as well as meeting present needs is also the main concern of another user in a Fortune 500 clothing manufacturer who asked that neither she nor her company be named. Before price, she also considers maintenance and support. Then comes price. She also looks at where a product is in its life cycle, checks manufacturers' financial health via quarterly reports and talks with users whose companies have conditions and applications similar to hers.

To evaluate factors such as compatibility and support before they buy, most users said they ask vendors for a list of customer references. Family Life Insurance requests at least five names of satisfied customers and an equal number of customers who are not satisfied with a communications equipment purchase. Johnson "discovered early on that products did not always function as they were presented." So, for the last 15 years, the company has requested references to find out why other users are both satisfied and dissatisfied.

"Without credibility, you can become a victim of cost."

Oakes also asks vendors for customer references before buying. To get your business, most vendors are willing to give customer references, Oakes said, and fellow users give truthful evaluations.

▶ COMPARATIVE REVIEW

On-line tariff services:

Don't leave your office without them.

BY JOHN J. HUNTER
Contributing Writer

There are many ways of keeping up with the latest tariff changes. Users can get them from the Federal Communications Commission or carriers, or they can subscribe to an independent service that gathers tariff information from all competing common carriers, combines related parts from several tariffs and highlights important new information.

Most independent services are marketed in a printed, loose-leaf format. Loose-leaf services are generally updated monthly and can cost thousands of dollars annually. The major weakness of the loose-leaf version is that tariff data is often inaccurate by the time it's used.

Two established companies in the tariff information business are McGraw-Hill, Inc.'s Computers and Communications Management Information group (CCMI) of Ramsey, N.J., and the Rockville, Md.-based Aries Group, Inc. Both organizations provide tariff information for intra- and inter-local access and transport area private analog and digital channels.

Both furnish on-line services for the major carriers. Aries' Dexus on-line system serves AT&T, Western Union Corp., American Satellite Co., MCI, US Sprint Communications Co. and US Transmission Systems. CCMI's Q-Tel 1000 service can accommodate AT&T, American Satellite, MCI, ITT, RCA, Satellite Business Systems and US Sprint. CCMI offers its tariff information in a loose-leaf form that is updated monthly, but Aries does not.

Both Dexus and Q-Tel 1000 provide FCC Tariffs 9 and 11 rates for every state except Alaska. Also included are special rates for those carriers belonging to the National Exchange Carrier Association (Neca).

The Aries offering lets users price analog and digital channels in Canada. This is an important feature because Canadian digital services are generally less expensive than analog lines. Dexus also provides rates for Puerto Rico, though Q-Tel 1000 does not. Neither service includes international rates.

Subscribers to Dexus and Q-Tel 1000 access the services over the dial-up telephone network. Dexus users call a local Tymnet/McDonnell Douglas Network Systems, Inc. or Continental Telephone office. If one is not available in the area, an 800 number is provided. Q-Tel 1000 subscribers can call a local GTE office; no 800 number is available.

Although the two services provide similar capabilities to determine the cost of point-to-point circuits, they differ in the amount of detail they show on their standard displays and in their abilities to perform circuit-path optimization and their capabilities to access certain AT&T Communications, Inc. facilities.

For example, a multidrop circuit under the special access tariffs requires explicit central office bridging. Because many bridges are involved and because users would want to limit use of bridges to keep costs down, it's difficult to determine prices for bridged multidrop circuits.

Under Dexus, the user defines the "from" and "to" points, and the system chooses the optimized bridge circuit. CCMI's service, on the other hand, is strictly point-to-point and does not perform bridged optimization. Without such optimization, the user has to perform a time-consuming bridging analysis on an individual basis.

Another important facility missing from the CCMI service is the ability to access AT&T wire centers. These centers are buildings that contain telephone company switching equipment to connect user circuits. This ability to access wire centers is significant because of the changes AT&T has made in the names and vertical and horizontal coordinates of its points of presence, or central offices.

AT&T central offices now have their own common language location identifier (CLLI) codes and wire center vertical and horizontal coordinates. In many cases, these codes are identical to those of the wire centers of local operating companies. AT&T's central offices are not part of the public telephone network; therefore, when users type in only the state or area code, they get the local operating company's wire center and not AT&T's. The difference is in the cost.

Without specifying the CLLI codes, for example, the Dexus system indicates that the Germantown, Pa., wire center will service a circuit from Gaithersburg, Md., to Rochester, N.Y., and that the monthly costs will be $55.02. When the CLLI codes for the AT&T wire center are specified, the total distance is reduced by four miles, and the monthly charge is $53.26, or $1.76 less per month. A vital aspect of channel pricing is determining the local channel detail costs. Under the predivestiture private line tariff, a nationally averaged rate of $36.05 per month was used to price the local terminations. Now, under FCC private line Tariffs 9 and 11, the charges for the classes of services of a local connection from an AT&T central office to a customer's premise reflect AT&T's actual costs under the access tariffs of the local operating companies.

Current monthly costs will tend to be higher because users are now charged for associated services. As a result, AT&T's local channel rates vary in local access and transport areas for such services as signaling, conditioning, inside wire recovery and both intracity and intercity mileage.

Two on-line services offered by Dexus, but not by Q-Tel 1000, are meet-point billing and circuit inventory services, which can store subscribers' circuit definitions in the Dexus central data base and generate impact reports on the circuits whenever a tariff originates or changes.

Subscribers can also use Dexus to model proposed circuits and estimate costs. Although CCMI has no facility like circuit inventory, it does offer two data base products that can be used with a personal computer or host mainframe to model and price proposed circuits. The Q-Tel 5000 is a customized data base that will price toll services originating from a single location.

The Q-Tel 9000 data base is a network design system like the Dexus circuit inventory. It allows users to determine call pricing in the 50 states and parts of Canada.

Meet-point billing, a part of the FCC's general access charge plan, mandates that the rates for access services must reflect, on a component-by-component basis, the actual costs of providing such services. Where an access connection crosses a boundary, appropriate rates of each carrier must be applied on either side of a defined interconnection point, or meet point, between two jurisdictions. Meet-point charges apply when access connection is within a state boundary, but involve more than one exchange center, or when an access connection crosses a state boundary.

Dexus and Q-Tel 1000 capabilities

Vendor/Product: The Aires Group, Inc. Dexus	Vendor/Product: CCMI/McGraw Hill, Inc. Q-Tel 1000	
✓	✓	On-line access
✓	✓	Area code and central office code access
✓		Wire center codes
✓		Canadian rate centers/tariffs
✓		Meet-point billing

SOURCE: TMS CORP., DEVON, PA.

Two proposals for alternate biling methods are in the works. Under the first proposal, interconnection points are defined as specific crossing points in the rating-point tariff for access services — Neca's FCC Tariff 2 — in much the same the way that the international border-crossing points are defined for U.S. and Canadian services. The interconnection points for the smaller exchange carriers appear next to each city in their operating territories.

To determine the price of a connection to a city served by an exchange carrier, one must use the access tariff of the area's major local operating company to the connection point and then use the smaller carrier's tariff to calculate costs from the connection point to the city being served.

Customers incur costs in the connection from their offices to the local telephone company and from the telephone company to the long-distance carrier. Then the carrier tacks on its charges. This method determines prices based on the mileage on each side of the interconnection point as if it were a completely new segment. It also takes into account the total mileage of the end-to-end connection.

In the second billing method, bill percentage, each possible connection between two states or two exchange carriers is listed explicitly in Neca's Tariff 2 along with the defined billing percentages.

This method requires that the rating-point tariff list every possible connection between every wire center on each side of the meet points.

The charges levied by both Q-Tel 1000 and Dexus are a bargain compared with the time and agony they save. Q-Tel 1000 charges a one-time setup charge of $100, which includes one subaccounting code. Each additional subaccounting code costs $50. Connect time costs 50 cents per minute, and the minimum monthly usage charge is $75. Transaction charges vary with the complexity of each search. The price of a simple point-to-point or toll-call circuit is only $1 per transaction. A $5 charge per transaction is levied to price out Wats line costs.

Dexus has no installation or minimum monthly charge. Connect time is 50 cents per minute, and an average transaction costs about $3. For the circuit inventory service, users pay the normal connect-time charge plus $1,000 per year. The $1,000 fee covers storage charges on the Dexus computer and CPU time used to access and manipulate the data base.

There is no question that Aries is the clear winner in the Dexus and Q-Tel 1000 contest. Being able to access specific wire centers allows for more economically priced circuits, and the level of detail on the standard reports is better. In addition, users can price North American services plus Hawaii and Puerto Rico with Dexus, but Q-Tel 1000 is limited to the U.S., with the exception of Alaska. Dexus supports meet-point billing. With Q-Tel 1000, users get to explore the mystery of Neca's Tariff 2.

Finally, the circuit inventory services feature of Dexus provides users with information on how the latest proposed tariffs and changes will affect their networks. This allows plenty of time for users to protest the proposed changes. While they're at it, they can mention how ridiculously complex these tariffs have become.

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